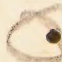
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MODERN ADVANCES
FOR
RURAL PRACTICE

MODERN ADVANCES FOR RURAL PRACTICE

BY

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FOREWORD

I have much pleasure in writing a foreword to Captain Dutta's book on Modern Advances for Rural Practice.

As he rightly says the Medical Officers in rural areas are greatly handicapped by not having access to medical libraries where current medical literature is to be found and not all can afford to subscribe to medical journals, certainly not to *all* the medical journals from which the information to be found in these pages is culled.

Captain Dutta deserves the highest praise for the industry he has exhibited in putting these notes together and I am sure this book will prove useful to the rural practitioners, and also to the practitioners in towns, offering as it does a bird's eye view of recent advances in all branches of the profession.

C. H. REINHOLD
COLONEL, I.M.S.
Inspector General of Civil Hospitals,
Punjab

LAHORE

PREFACE.

Extract from a letter to the Medical Officers of the District,

"Most of you cannot afford to buy new editions and Journals all the time and very few of you have the time to read them and most of the things that you may learn from reading these books are not feasible for application in your practice and as such useless waste of time and money. Moreover, it is very difficult for you to select the useful from the useless from among the vast literature that is emanating everyday.

"Therefore in future to guide and help you, I shall from time to time send out circulars dealing with modern advances in Medicine which I consider may be useful for your practice".

It was with this intention that these papers were prepared and sent out to the Medical Officers in my district. They were never intended for publication in a book form, but were only meant to supplement the doctors' knowledge. So I confess that mistakes of omission are inevitable. Although some of materials are as old as medicine itself, they have been included to impress the method of treatment.

At the request of some friends and rural doctors, I am having these published in a book form, and shall be gratified if this is found useful for relieving the suffering of the masses of India. It is primarily meant for the rural practitioner, but I hope it will prove equally useful to the average general practitioner in India, who has not got the modern methods of diagnosis and treatment at his disposal.

Among others I am indebted to the authors and publishers of the following books for the very valuable information contained therein, and their permission to use them. Beckman's Treatment in General Practice (Saunders), Beaumont and Dodd's Recent Advances in Medicine (Churchill), Bailey's Emergency Surgery (John Wright), Price's Medicine (Oxford University Press), East and Bain's Recent Advances in Cardiology (Churchill), Burrel's Recent Advances in Pulmonary Tuberculosis (Churchill), Piney's Recent Advances in Hæmatology (Churchill), Brain and Strauss' Recent Advances in Neurology (Churchill), Pearson and Wyllie's Recent Advances in Diseases of Children (Churchill), Bankart's Manipulative Surgery (Constable), and Chopra's Tropical Therapeutics (Art Press).

I am thankful to Col. C. H. Reinhold, M. C., I. M. S., Inspector General of Civil Hospitals, Punjab, for encouragement, very valuable suggestions and for writing a Foreword to the book. I am grateful to the publishers for the care and trouble they have taken to publish a number of papers in a book form.

Lastly, I thank my wife for her interest in Rural Medical Relief Work, encouragement in the production of the book and help in reading the proof.

Sargodha.

P. C. D.

MODERN ADVANCES
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ADDISON'S DISEASE.

Caused by destruction of the adrenal cortex.

Main Symptoms—Feeling of lethargy, wasting, myasthenia, pigmentation of the skin, specially of the face, neck and the upper extremity.

TREATMENT—Extract of the adrenal cortex. Eucortone is one of the commercial preparations. The dose required will depend upon the amount of active cortex left, usually 10—20 cc. to 40—60 cc. in a day is required.

Vitamin C may prove useful.

Acute stage—Intravenous injection of 250—1000 cc. of normal saline with 5% glucose with eucortone.

AGRANULOCYTOSIS

A rare disease. There is a total reduction of white blood cells, often below 1000 per c.mm. with a very low polymorphonuclear count.

Supposed to be caused by amidopyrin (pyramidon) and allied drugs

TREATMENT—Pentnucleotide, 10 cc. intravenously or intramuscularly. In severe cases blood transfusion should be given in addition to the pentnucleotide.

ALKALOSIS or Alkali Poisoning. (See also gastric ulcer)

Patients who are under alkaline treatment, as for gastric ulcer, are liable to suffer from this.

SYMPTOMS—Deterioration of appetite and specially averse to milk.

Change in character and mentality of the patient, becomes difficult, irritable. Attacks of melancholia. Mind not so clear.

Vague headaches and general muscular pains. Headache is worse in the evening.

Vision may be blurred.

Symptoms increase in severity and drowsiness and coma may supervene. In severe cases it may point to uraemia.

Urine—Alkaline, contains albumin, hyaline casts and low concentration of chlorides. Polyuria may be present.

TREATMENT—Stop all alkalies. Remember to stop the citrate in the milk as well, if this is being given.

Replace Chlorides—Rectal saline with ammonium chloride. Be careful not to produce acidosis as the kidneys are damaged. Test the reaction of the urine frequently.

ALLERGY.

Some individuals are hypersensitive to certain foreign bodies, generally proteins or their break down products, which are harmless to most. This state of hypersensitiveness is known as allergy. Recently it has been observed that some individuals may be hypersensitive even to physical agents as heat, light, X'rays etc. The commoner allergic conditions are asthma, hay fever, urticaria, angioneurotic oedema, eczema and migraine. It may also manifest itself as purpura, rhinorrhœa etc.

Allergic hypersensitiveness is very often inherited, more usually through the mother.

An allergen is generally introduced into the body by inhalation, contact or rarely by injection, *e.g.* bites and stings.

All allergic conditions are relieved by injection of adrenalin or administration of ephedrin. The former is more powerful and reliable.

Asthma.

TREATMENT—Avoid the articles which precipitate the attack.

I. Non-specific protein therapy has proved more useful than most of the other drugs and forms of treatment.

(a) Peptone.

Preparation—Make a 33% solution of Armour's dry peptone in equal parts of glycerine and water. Warm the solution to dissolve it thoroughly and then filter it.

Start with 3 minims of this solution and increase by 1 m. at bi-weekly or tri-weekly intervals until 1 cc. is reached.

(b) Injection of whole blood.

5-10 cc. of blood is withdrawn from a vein and the same is injected into the buttock.

II. Respiratory exercises designed to teach the patient to use the lower part of the chest and diaphragm for breathing are useful.

III. Epinephrin—Best in relieving an attack.

IV. Ephedrin—Less reliable than epinephrin in relieving an acute attack and is much slower in action, although the effect is longer lasting. It is more toxic.

Allergic Coryza.

Auto-hæmotherapy has been found useful. In certain individuals face powders containing oris root cause allergic symptoms. These patients should use powders free from oris root as prepared by Boutalls Ltd. (Queen products).

Eczema.

Local—Keep it clean or clean it with warm olive oil or poultices.

If there is no sepsis or when it is clean, apply zinc paste if the surface is acutely inflamed or angry.

In the chronic lichenified type use crude coal tar. It is applied as a varnish. Equal parts of coal tar, acetone and collodion flexile is painted over the surface, allowed to dry and dusted freely with starch and zinc powder.

If there is much thickening or lichenification

Icthyol ...	Dr. 1.
Zinc oxide ...	Dr. 5.
Lanoline ...	Dr. 2.
Lime water...	Dr. 4.
Almond oil...	Dr. 4.

Old dressing and crusts should be removed with warm olive oil.

Infantile eczema—Most likely some of the foods are not agreeing, so try to find it out and exclude it from the diet. If the child is on cows milk, try goat's milk. Allergilac may prove useful.

In the weaning stages milk protein is usually the offender.

AMBLYOPIA, Tobacco.

Treatment—Stop smoking. Vasodilators are useful. Sodium nitrite intravenously or oral administration of erythrol tetranitrate.

ANÆMIA.

1. **Pernicious anæmia.**

(Macrocytic and Hyperchromic anæmia).

Castle and his associates have proved that it is a deficiency disease caused by the lack of a specific intrinsic factor which is present in the normal gastric juice but is absent in one suffering from this disease. This intrinsic factor by interaction with an extrinsic factor, normally supplied in the food, produces a hæmopietic (blood forming) substance, or specific anti-anæmia factor, which prevents pernicious anaemia ; this is absorbed from the intestine, stored in the liver and supplied as required to the bone marrow. The extrinsic factor is now believed to be closely related to vitamin B. Extract of stomach contains the intrinsic factor.

TREATMENT.

Principle—Gastric juice is lacking in the intrinsic factor, so supply the antianaemic principle by liver or stomach extract. Stomach extract is not very palatable ; moreover it is usually prepared from hog's stomach, so it may be open to objection in this country. The extrinsic factor may be able to prevent the disease, if supplied in very large quantities provided some amount of intrinsic factor is present.

(a) Liver.

i. Raw or lightly cooked.

Amount required—250 Gm. of raw liver or extract derived from 400 Gm., liver of a day.

ii. Liver extracts prepared by the various manufacturers.

iii. Preparations for injection, Hepatex P. A. F., Campolon, hepastab etc. They are very useful in acute cases and for patients who refuse to take the extract by mouth.

(b) Anahæmin—It is the active antianaemic principle of liver. Commercially prepared by the British Drug House. Very small doses are required.

In an acute case blood transfusion may be necessary.

NOTE. Fever and enlargement of the spleen is not uncommonly associated with the disease in this country, and these cases are often misdiagnosed as malarial cachexia and have had a prolonged treatment with quinine without any effect and one very often sees them arriving in the hospital in a dying condition. They will need an intensive and energetic liver injection therapy.

Microcytic Anæmia

(Simple achlorhydric anæmia, Hypochromic anaemia.)

Usually seen in women between 30 and 50.

Gastric juice contains very little hydrochloric acid.

Anorexia, flatulence and discomfort after meals, so that carbohydrates are mostly eaten and the diet is usually deficient in green vegetable and meat for some time.

TREATMENT—Massive doses of iron, *e.g.*, Ferri et Ammon. Cit. gr. 30 T. D. S.

In some cases hydrochloric acid is of value, probably due to checking postprandial diarrhœa or flatulence,

Hydrochloric acid Dil.—m. 40.
Glycerine pepsin—Dr. 1.
Sy. Aurantii—m. 20.
Aq.—Dr. 2.

One dose in a glass of water with meals.

The disease is liable to recur if iron is stopped.

If Ferri et Ammon. Cit. causes alimentary disturbance Blaud's pill (gr. 15, six times a day) should be substituted.

Liver therapy is useless,

A good well balanced diet, rich in iron with added vitamin B_2 (Marmite or yeast) and C.

Normocytic Anæmia.

(Aplastic anæmia).

Cause—Progressive failure of the function of the bone marrow.

Total white blood corpuscles, about 1000.

Colour index between 0·9 and 1.

TREATMENT—Blood transfusion.
Liver therapy is not effective.

ANÆMIA OF INFANCY.

The anæmias of infancy may be roughly classified as belonging to three groups.

I. Hæmolytic.

II. Anhæmpoietic or defective blood formation.

III. Erythronoclastic—Following the initial destruction of blood (hæmolytic), regeneration temporarily or permanently fails.

I. Hœmolytic.

(a) Physiological.

As the infant in utero is living in a medium of low oxygen tension, exactly the same as when one has to live in high altitude, it is necessary for the red blood corpuscles to be present in large numbers so that tissue respiration may be maintained. After birth many of these cells become redundant and therefore destroyed. In this way a physiological anæmia results.

The fall of hæmoglobin and red cells although most rapid in the first week or two of life is not limited to that time but continues slowly for the first 3 or 4 months.

It does not require any treatment.

(b) Pathological.

An hyperchromic anæmia developing rapidly in the first few days after birth. The Van den Bergh reaction is positive, colour index is high, nucleated red cells are numerous. It is usually associated with jaundice.

TREATMENT.

i. To check further destruction of blood—Intramuscular injection of 5-15 cc. of human blood serum given as early as possible and repeated daily until improvement begins.

ii. In urgent cases the fatal issue can only be prevented by whole blood transfusion. For this purpose the mother's blood can be used in the first three months without making any group testing.

II. Anhaemopoietic.

(a) APLASTIC.

We are ignorant of the cause. Scantiness of the marrow tissue, the anatomical result of limited bone space

which restricts the output of blood cells, suggests an attractive hypothesis. Certain cases may be due to depressed marrow function from infection.

CLINICALLY—A sudden pallor without trace of jaundice or hæmolysis comes on a few days after birth. Van den Bergh reaction is negative and signs of blood regeneration is absent. Iron is without effect and liver extract, though not of proven value is worth a trial.

TREATMENT—In all cases except mildest, whole blood transfusion is the only effective treatment. If after a time spontaneous regeneration begins, prognosis is good. But failing this the aspect of idiopathic aplastic anæmia is assumed and the infant dies.

(b) NUTRITIONAL or Deficiency anæmia.

This is the most important group. Not only in this the commonest type seen in this country, but the more important fact is this that it is easily amenable to proper treatment.

It is certain to develop unless the child gets a diet containing an adequate amount of iron towards the end of lactation. Unless the diet of the mother was deficient in iron, there is enough storage of iron in the liver to make up for iron deficiency up to this time.

PREVENTION—It can be prevented by giving an adequate iron supply both to the mother during pregnancy and child during lactation period. The mother's diet must contain at least 15-20 mg. of iron a day. It is necessary therefore to administer iron to all pregnant women whose diet is suspected to be deficient of iron, *e.g.*,

Ferri et ammon citras—Gr. 15
Sy. Aurantii —Dr. 1
Aqua ad —Oz. 1

One dose thrice daily.

or one sugar-coated tablet of Ferrous sulphate (Glaxo Lab.) may be given three times a day.

For the artificially fed infant it is best to give some dried milk to which iron has been added as Haemolac (Cow & Gate). If this is not possible one of the iron preparations recommended below should be given to the infant.

TREATMENT.

One of the following should be given.

Ferrii Sulph—Gr. 4
Syrup —Dr. ½
Aqua —Q.S.

or

Ferrii Redact—Gr. 2
White sugar —Gr. 2½
Ft. Pulv.

or

Ferri et Ammon Cit—Gr. 4
Sy. Aurantii —Dr. ½
Aqua —Dr. 1½.

Copper and yeast are also valuable for nutritional anæmia. Iron always contains copper as an impurity.

Yeast should be added if the infant is not improving under iron treatment. It may be given as Yestamin 1-3 dr. daily or as Marmite.

Ferrofax (British Colloids) is a preparation which contains iron, copper and yeast.

ANÆMIAS IN PREGNANCY.

Several types of anæmia are associated with pregnancy, of which three are important. They are usually due to defective diet and assimilation and therefore are preventable.

I. Hypochromic anæmia.

Cause—Inadequate amount of iron in the food.
Clinically—Anæmia with oedema of the lower extremities.

Decrease of the red blood corpuscles and haemoglobin.

PROGNOSIS—Generally good.

TREATMENT—Adequate diet containing sufficient amount of iron, copper and manganese.

Iron—Fresh Blaud's mass gr. 100 a day or Ferri et Ammon Cit. gr. 30, T. D. S.

The under-mentioned food stuffs contain iron, copper and manganese and all the vitamins: asparagus, almond, beef (lean), beans, barley, carrots, cheese, eggs, green vegetables (especially spinach and lettuce), liver, oatmeal, peas, pea-nuts, potatoes, prunes, resins, walnuts, wheat.

II. Microcytic Anæmia.

Cause—Associated with gastro-intestinal disturbances and a diet poor in haemopcietic elements, *e.g.* proteins, fruits and green vegetables.

The patients invariably suffer from hypochlorhydria or achlorhydria, accompanied by inactivity or reduction of pepsin.

Symptoms are aggravated by the foetus robbing the mother of the haemoglobin building materials for its own use.

Clinically—Hypochromia with marked reduction of haemoglobin, but a less marked diminution of the red blood corpuscles. Erythrocytes are small (microcytes). Normoblasts may be present but no megaloblasts in the blood film.

TREATMENT—Sunlight and dietetic treatment as in the previous group.

Raw liver 200-400 Gm. a day, or equivalent amount by injection.

Fresh Blaud's Mass gr. 15 six times a day or Ferri et Ammon. Cit. gr. 30 T. D. S.

Dilute hydrochloric acid m. 30, well diluted with water, taken in fresh orange juice with meals.

III. Megalocytic Anæmia.

Very common in this country.

More often due to lack of Castle's extrinsic factor (vitamin B complex) in the diet than the intrinsic factor.

CLINICALLY.

Begins early in pregnancy.

Waxy appearance.

Spleen enlarged. Fever frequently present.

Tongue sore.

Blood picture—Same as in Addison's anæmia.

Colour index above one.

Megalocytes are always present. Erythrocytes show marked variation in shape and size.

TREATMENT.

Diet—as in Group I.

Marmite $\frac{1}{2}$-$\frac{3}{4}$ ounce with or without repeated small blood transfusions. Marmite is given is soup, bread or with crushed ice.

If marmite alone is not effective, liver should be given orally or by injection. Iron should also be administered.

ANGINA PECTORIS.

Differential Diagnosis from other causes of precordiāl pain.

1. Coronary Thrombosis.

The differentiation from coronary thrombosis is very urgent. On it depends prompt treatment and saving of the patient's life. See also coronary thrombosis.

2. Panniculitis.

i. Pain is under the breast. Anginal pain is generally substernal.

ii. Tenderness in the apical region.

iii. No sign or history of heart disease.

3. Pleurisy.

The pain has a relation to respiration. Other signs of pleurisy will be evident.

4. Gastric pain.

Usually the pain is not so high up.

Angina may be associated with indigestion, but is often precipitated by exertion.

Does not cause changes in circulation.

TREATMENT.

During attack—i. Amyl nitrite inhalation.

ii. Tablets of nitroglycerine put under the tongue and dissolved in the mouth (not swallowed).

Prevention of attack.

It should be explained to the patient that he should live within the limits of the power of his heart and he should avoid those that precipitate the attack.

Lacarnol m. 20 per day may be useful.

A threatened attack can be prevented by administration of nitroglycerine immediately before exertion.

BACILLUS COLI INFECTION.

The infection is usually mild and as such often neglected. Energetic early treatment is essential.

The question of diagnosis is very difficult in rural areas. It should be thought of in all cases of intermittent fever, resistant to quinine when there is no reason to suspect hepatitis or tuberculosis, with acid urine. There may be some tenderness or discomfort in one of the loins.

TREATMENT.—Constipation must be corrected but drastic purgatives avoided.

Alter the intestial flora by givinig B. Acidophilus (may be given as 'Dahi') and by lactose.

All protein foods including milk must be avoided in the acute stage.

ACUTE STAGE—Bed.

Large quantities of fluid.

Large doses of alkalies, *e.g.*, Pot. Citras. with some antispasmodic as hyocyamus. Usually 30 gr. of, Pot. Citras. three times a day is given but as much as 150 to 300 gr. may be given in 24 hours. These large doses are best administered by asking the patient to sip the mixture every two hours or more frequently from a tumbler.

If alkalies have not been successful, the urine should be acidified by giving acid sodium phosphate.

CHRONIC STAGE.

Alternate period of acid and alkali administration may prove more useful than the continued use of either.

Autogenous vaccines may be useful. Start with 5 millions and increase to 30 millions.

If alkaline treatment fails, good results often follow Mandelic acid treatment.

Method.—Ammon Chlor.—gr. 30
Liqd. Ext. Liquorice—m. 15
Water ad —oz. 1.

This is immediately followed by
Sodium mandalate—gr. 50
Syrup of orange—dr. 1
Water ad —oz. 1.

The above two mixtures are given four times a day. Former is immediately followed by latter.

The amount of fluid intake is restrained to two pints a day unless the patient complains of thirst when a little more is allowed.

The success of the treatment depends upon maintaining fairly strong acid reaction of the urine. This

can be tested by addition of 5 drops of methyl red in 2 cc, of urine—the appearance of bright pink colour indicates satisfactory acidity. Orange or yellow colour indicates that it is too alkaline.

The amount of ammonium chloride is increased or reduced according to the acidity of the urine. Ammonium chloride will increase the acidity of the urnine.

Disadvantages—Two unpleasant medicaments one closely followed by the other.

Ammonium chloride is nauseating.

Mandelic acid itself is a gastric irritant, so it has to be given as a salt.

Several preparations have been introduced to obviate these disadvantages.

1. Mandelix (an elixir, B. D. H.). One ounce containing 34 gr. of ammonium mandalate (equivalent to 30 gr. of mandelic acid), four times a day, gives satisfactory results, but the degree of acidity is not invariably maintained, so a higher dose of about 50 gr. four times a day recommended.

2. Ammoket (an elixir ; Boots).

3. Neoket (pleasantly flavoured granules ; Boots).

4. Calcium Mandalate has been found as efficacious as any other mandelic acid salt. It is tasteless and seldom causes dyspeptic symptoms and produces a sufficiently acid reaction of urines. Preparation—Camygdal (Knapp).

BACKACHE.

This ailment will be described in some detail ; firstly because it is the commonest complain of the malingerer, (knowing that he cannot be found out) who wants pension or leave, and secondly because the genuine case only receives a half-hearted treatment. It must be realised that the disease is most prevalent among the middle aged people of the labouring class who have to earn their own livelihood, and incapacity for them means starvation for the whole family. The condition can always be relieved by proper treatment if not cured. The conditions described may collectively be termed as 'low back pain'.

Causes.

1. Neurotic Spine.
2. Sacro-iliac strain.
3. Lumbo-sacral strain.

4. Acute and Chronic lumbar back strain.
5. Spinal arthritis with or without sciatica.
6. Lumbago.
7. Definite disease of the spine, *e.g.*, Pott's disease, compression of the spine. They present the characteristic clinical picture of the disease.

Only the upper 6 groups of cases will be discussed.

1. **Neurotic Spine.** In its most exaggerated form it presents itself as Railway Spine.

It does not refer to the comparatively uncommon hysterical condition occasionally met with in young women, but it presents itself sooner or later in any individual of either sex who is suffering from long continued pain in the back.

TREATMENT—Treat the primary condition.

Traumatic neurasthenia or Railway Spine is an anxiety neurosis and should be treated as such.

2. **Sacroiliac Strain.**

Onset—(a) Suddenly with a sharp pain in the joint during some effort or after a fall.
(b) Gradual.

In many cases it is associated with faulty posture and an exaggerated lumbar lordosis which throws a more or less constant strain on the sacroiliac joints.

Symptoms.

Pain over the back of the sacroiliac joint. It is worse after sitting and often better when walking about.

A feeling of insecurity.

Pain and tenderness over the posterior superior illiac spine or immediately below it.

No pain or tenderness over the sciatic notch or down the sciatic nerve.

It is usually unilateral.

When the hip is flexed with the knee straight, the movement is more restricted on the affected side.

Pressing the bones together or apart is useless as a test. Differntial diagnosis.

Tuberculous disease of the joint.
Comparatively rare.
Much more disabling.
Seldom comes for treatment before abscess formation.
X-ray.

TREATMENT.

Forcible manipulation under anæsthetic followed by massage and exercises.

Technique of manipulation (Bankart)

The patient lies on a firm low table or a high hard bed. A general anæsthetic is given.

Patient lies on her back and the surgeon stands on the right side of the table. The surgeon passes his right forearm behind the patient's knees and he lifts both the lower limbs together with a swing fully flexing the hip-joints. In this position he puts heavy pressure (body weight) on the back of the patient's thighs, pressing them against the abdomen, so as to flex the lumbar spine and the pelvis.

Second Movement—The patient lies on his right side, facing the surgeon. The left shoulder and upper part of the body being nearly supine and left hip and lower half of the body nearly prone, in other words there is twist in the spine in the lumbar region. This twist is exaggerated by the surgeon. He grips the patient's left arm with his left hand and keeping his elbow straight he pushes the shoulder backwards on that side. At the same time he puts the upper part of his right forearm (bent at right angle at the elbow) on the back of the patient's left ilium, which is looking nearly upwards and he leans his weight upon it. Then with a sudden sharp movement he presses the ilium forwards (towards the table) with his (right) forearm and the greater part of his body weight behind it.

Third Movement.—The patient lies on the other side and the surgeon goes to the opposite side of the table. Exactly the same movement is then carried out on the other side, the surgeon's hands of course being reversed.

Fourth Movement.—Surgeon returns to the right side of the table and stands on a footstool (if the table is too high). The patient is turned on to her face and lies absolutely prone. The surgeon raises the patient's thigh with his right forearm passed beneath them just above the kness. To do this, specially with a heavy patient, he must put his right knee on the table, and kneel on it. He now puts the palm of his left hand over the lower lumbar spine (or the lumbosacral junction) and keeping his elbow straight, he gives a sudden thrust with his left arm in this position. The patient is then sent to bed.

After Treatment—Massage and exercises are commenced on the following morning and are continued for at least a month. The purpose of the exercises is to mobilise the lumbar spine and

the sacroiliac joints, and to correct the faulty posture which is frequently associated with it.

3. Lumbosacral Strain.

It must not be confused with sacroiliac strain.

Symptoms.

Onset may be gradual or there may be a history of injury.

Tenderness at the tip of the spinous process of the fifth lumbar vertebra and the space immediately below it in the middle line or a little on either side of it.

Pain across the base of the sacrum.

Forward flexion is prevented by the spasm of the strong Erector spinæ muscles, but usually the patient is able to bend forwards, the movements taking place in the lumbar spine above the lumbosacral joint.

Pathology.—Chronic sprain of the interspinous ligament between the spinous processes of the fifth lumbar and the first sacral vertebræ.

Treatment.—Manipulative treatment is not successful as the lumbar spine is so movable that it is not possible to localise a manipulation to the lumbosacral joint.

Satisfactory results are only obtained by excision of the fifth lumbar spine from its base. A longitudinal incision is made over the spine. The soft tissues are separated from the spine and then it is cut off at the base with a pair of bone forceps. After the operation, the patient should get up as soon as possible, (before the stitches are out) and made to do simple excercises as bending forwards, backwards and from side to side.

4. Acute and chronic lumbar back strain.

Acute back strain is essentially a localised rupture of some of the deeper fibres of Erector spinæ, either during an effort or stooping, in an awkward position.

Localised tenderness over the Erector spinæ on one side. The muscle is in strong spasm ; on attempting to bend, the lumbar spine does not move at all.

Treatment.—Immediate mobilisation under anæsthetic followed by massage and exercises. Technique is practically the same as for sacroiliac strain except that in performing the rotatory movement, the forward thrust is applied to the side of the spine at the level of the injury.

5. Spinal arthritis with or without sciatica.

Osteoarthritic deformity or enlarged articular processes of the fourth or fifth lumbar or first sacral vertebræ lead to compression and irritation (funiculitis) of the fourth and fifth lumbar nerves and the pain is referred along the sciatic nerve. As periarticular swelling and fibrosis may precede bony changes, in an early case the X ray picture may be negative.

Clinical picture.—Lumbar spine is stiff.

Spasm of Erector Spinæ may be present.

Patient may be leaning away from the painful side. Differentiation from sacroiliac strain is important. If the tenderness is localised over the posterior superior iliac spine, it is definitely sacroiliac strain.

Tenderness over the sciatic notch and pain along the sciatic nerve—Sciatica.

Treatment.—The bony changes of osteoarthritis is permanent and no treatment will alter them.

Mobilisation of the stiff lumbar spine will frequently relieve much of the pain.

Massage etc. later on.

6. Lumbago.

True lumbago is an inflammatory affection of the lumbar aponeurosis which often comes on after exposure to cold and wet. The onset is acute and sudden but never with the snap, so to say, of acute back strain. It produces board like rigidity of the lumbar spine. The characteristic localised tenderness of acute back strain is not present. It gets well in a few days with rest and local applications directed to encourage vasodilatation in the affected area. Massage as kneading two or three times a day and then movement is encouraged. Prolonged heating with hot water bottle or (Dhobi's) iron as hot as can be tolerated (applied over a blanket) will give quickest results. Analgesics as aspirin may be required.

7. Backache in women.

In some cases pelvic lesions as retroversion or tumour of the uterus are present. This group will need proper treatment of the pelvic abnormality found.

In the other group the patients have been long suffering from chronic backache probably from adolescence. They are of the asthenic or hypotonic type. Here the defect is in the

abnormal deviation of the centre of gravity due protrusion of the abdomen forwards below the umbilicus. These patients will be relieved if not cured if the lower abdomen is supported with a belt or properly fitting corset and remedial exercises.

BENZEDRINE.

Uses and effects—Very useful in narcolepsy. Start with 10 mg. of benzedrine sulphate and gradually increase the dose.

Inhalation relieves congestion of the nose and eustachian tubes. Continuous inhalation is however deprecated.

Causes temporary increase of the mental faculties and intelligence and some rise of the blood pressure. So useful for fatigue, depression, morning apathy and general lethargy.

BERI BERI.

A condition of peripheral neuritis, occurring principally among the rice-eating population.

Dry Type—Wasting, anæsthesia of the skin and finally paralysis of the limbs.

Wet Type—Excessive oedema ; heart usually enlarged ; death may result from heart failure.

TREATMENT.

1. Alcoholic extract made from the peripheral layer of the rice grain.
2. Administration of vitamin B as Marmite or yeast.
3. White potatoes and fresh meat should be given at least once a week.
4. Soya beans are very good.

BIRTH CONTROL or CONTRACEPTION.

The principles underlying this new science are becoming more clearly established and it is being realised that it is of inestimable value to the individual as well as to the nation. Every doctor should be able to give advice regarding this, specially at a time when the public and the lay press appear to know all about it. A good book for the purpose is Clinical Contraception by Dr. Gladys Cox.

The methods employed for the control of conception are continence, coitus in the safe period, coitus interruptus, holding back, condom or sheath, occlusive passaries and cap pessaries, chemical contraceptives and douching.

The question of absolute continence does not come in the field of practical politics and may be dismissed as such.

Coitus in the safe period or Naturāl contraception.

This is the most practical and useful method to employ. Although it has technical difficulties and ensures better chances of sūccess in the case of intelligent woman, it is certainly more practicable for the poorer village people. It does not need any extra appliance, extra expenditure, visiting the doctor, and it is credited with 80% success. So this will be described in detail and only a passing mention will be made of the other methods.

Principle.

Ovulation takes place on the 15th day before menstruation takes place, *i.e.* if menstruation starts on the 10th February, ovulation took place on the 26th January.

If coitus is avoided for five days, 3 days before the date of ovulation, the day of ovulation, and one day after ovulation (*i.e.*, on the 23, 24, 25, 26, 27th of January in the above mentioned example), fertilisation of the ovum will not take place.

Practice.

The first day of the next menstruation has to be found out first of all. This is the most difficult and uncertain part of the whole procedure. To be scientifically accurate, the woman must record the dates of onset of menstruation on paper for at least a year. Then the doctor from the record should be able to find out the cycle of menstruation, (at what interval she menstruates) for the particular woman, *i.e.*, whether it is every 28 days or 30 days or less or more.

When the cycle of menstruation is known, the dates on which she will menstruate can be easily found out.

When the dates of menstruation are found out, on the 15th day before these dates, would be the dates of ovulation.

The woman is advised to avoid coitus for three days before the due date of ovulation, the day of ovulation and one day after ovulation. If the accurate dates of menstruation cannot be determined, coitus should be avoided for four days before the approximate date of ovulation, the day of ovulation and two days after ovulation and this will give satisfactory results in about 75% of cases.

Obviously the success of the method depends on the intelligence of the woman and how much accurately she can guess the exact date of onset of the next menstrual period.

This method is successful so long as the periods are regular. Any irregularity hopelessly upsets the safe period.

Knaus has prepared a calendar for the above purpose which can be had from Messrs. H. K. Lewis & Co., 136 Gower Street, London. W. C. I. This gives at a glance the date of ovulation from the dates of menstruation and the days when coitus should be avoided.

Coitus interruptus.

The oldest method of birth control. It is also known as withdrawal. It consists of withdrawal of penis before the spermatic fluid has been deposited in the vagina. It is liable to induce various anxiety neuroses and nervous manifestations.

Holding back.

Consists of an attempt by the female to delay the orgasm until the penis has been withdrawn. It is of questionable utility and affects the nervous system of the female very badly and it may lead to the consequences of unsatisfied sexual gratification on the part of the female.

Condom or Sheath (Popularly known as French Cap in this country).

Used by the male. It must be made of reliable material and the rubber must not be too old.

It effectively prevents deposit of semen when worn by the male and is of value in avoiding venereal infection and therefore is very popular. It debars the female from the hormonal value of the seminal fluid and dulls the sensibility of both the male and female. The coitus under these conditions has been described by one author as mutual masturbation and by another as sucking a caramel with the paper on. Purulent vulvovaginitis is not uncommon after using the sheath.

Occlusive Pessaries.

(*a*) The diaphragm pessary also known as the Dutch Cap. It is made in various sizes. It fits accross the vagina from anterior to the posterior fornix.

(*b*) Cervical Cap—Made in four sizes and fits over the cervix.

(*c*) The Dumas Cap—This is occasionally used when neither of the above is suitable.

Chemicals.

Some of them are useless and some others are harmful.

Ointments and solubles.

They should contain hexyl-resorcinol, which is the best spermacide available at the moment. These are generally used with the cap. The ointment is placed

round and above the cap, which should be inserted 5 minutes to 2 hours before coitus. The soluble is placed below the cap, 5 minutes before the coitus.

Douching the vagina.

Douching after, and sometimes before and after, coitus is a popular method. The sooner the douche is used the better will be the result. It is not free from danger. Soon after coitus the whole pelvis is in a very congested state and douching interferes with vascular subsidence. Sometimes women hurt themselves in the process. It is not uncommon for one to faint if the water is squirted into the womb in that hypercongested state.

A note of warning is necessary about the use of quinine. The objections to its use are :

1. It has very low spermicidal value.
2. It is harmful to vaginal mucous membrane. May cause irritation of vagina and penis.
3. May be absorbed into the circulation and cause constitutional symptoms.

The present position of the sale and manufacture of the contraceptives is most unsatisfactory. Some of them are useless and others positively harmful. Even the condom or sheath should be of good quality otherwise it is liable to rupture. So any practitioner who wishes to be certain of his supplies should seek information from Birth Control International Information Centre, Parliament Mansions, London S. W. I. The following have been recommended, Milsan, Prensol, Koromex.

BLACK WATER FEVER.

Researches of Thompson indicate that the malignant tertain malarial parasite is the causative organism in all cases. Sinton suggests that a specific plasmodium, P. Tenue Stephens is responsible. Strickland believes that several varieties of mosquitoes are capable of modifying the malarial parasite so as to provoke black water fever.

TREATMENT.

If malarial parasites are present in the blood, give intramuscular injection of quinine bihydrochloride, but not sulphate or bisulphate.

Atebrin is preferable to quinine but plasmoquin should not be given.

Keep up a high blood pressure by giving fluids by mouth, rectum, subcutaneously and if necessary intravenously. If the

blood pressure is low hypertonic saline should be given intravenously.

Calcium chloride or lactate should be given for 3 or 4 days. Glucose and insulin were formerly recommended but have lately been given up by most. Intramuscular injection of large doses of liver extract as campolon has given very good results.

Stimulant, *e.g.*, brandy should be given if necessary. More active cardiac stimulants will be necessary for heart failure.

BLOOD TRANSFUSION.

The success of the operation depends cn attention to details. Everything should be ready before starting it.

Choice of donor.

Healthy young man preferably between 18 and 25.

Wassermann reaction of the blood must be negative.

Individuals belong to four groups. Those of Group I are universal recipients and those of Group IV are universal donors.

Make sure that the bloods of the recipient and donor are compatible otherwise hæmoylsis or agglutination will occur and this may end fatally.

Testing the compatibility of the blood.

A compatibility test should always be carried out before transfusion. In a very urgent and immediate case blood of Group IV may be transfused without testing, but there are numerous possible sources of error, and it should be avoided if possible.

DIRECT METHOD.

Take 2 cc. of blood from the recipient's vein and allow it to clot in test tube.

When the blood has coagulated, remove a little of the clear serum with a pipette.

Put one drop of the serum on a glass slide.

Puncture the donor's finger (with aseptic precautions) with a needle.

Take a drop of the blood with a small sterilised rod or a match stick (wiped with alcohol).

Mix the blood with the serum on the slide by gentle rocking and examine it after about five minutes. The amount of blood should be just sufficient to impart a definite red tint, but not enough to colour the serum deeply.

Agglutination can be readily seen on a white back ground.

In case of agglutination—the redness within the drop becomes patchy and presents a definite granular appearance resembling brick dust.

This should not be confused with the appearance produced by accumulation of the corpuscles at the centre of the drop. In agglutination, granulation appears simultaneously throughout the drop and not only at the centre.

If there is no agglutination it forms a homogenous mass.

Transfusion of citrated blood.

PREPARATION OF CITRATE SOLUTION. It must be freshly prepared.

Dissolve three grammes of sodium citrate in 150 cc. of distilled water and sterilise it by boiling. If ordinary water is used it is advisable to filter it after boiling. Sterilised dry sodium citrate ready for immediate use is obtainable in the market (May and Baker) in 1 Gm. capsules. This dissolved in warm sterile water is ready for use.

Put 100 cc. of the solution in the sterilised collecting flask. This is enough for one pint of blood, which is the amount usually transfused.

The remaining 50 cc. is used to syringe through the apparatus.

COLLECTION OF BLOOD.

I. Apparatus required.

1. A sphygmomanometer.
2. A sharp hollow needle with wide bore. (keyne's)
3. About 8 inches long rubber tubing is fixed at the base of the needle.
4. A clamp for occluding the tube.
5. A sterile jar—capacity at least one pint.
6. A bowl containing warm water.
7. Sterile novocaine solution.

It is advisable to have two needles and tubings ready.

Immediately before use the citrate solution is forced through the tube and the needle and are filled with the solution. Then the clamp is applied to the tube and this is not removed until the needle is inside the vein.

It is not always necessary to incise the skin to expose the vein. If the anticubital vein is too inconspicuous this has to be done. In quite a number of cases if the arm

is kept in a jug of hot water (as hot as can be comfortably borne) generally enough vasodilatation is caused to make the vein fairly prominent.

Technique.

Donor takes off his shirt and lies on the table.

The sphygmomanometer is applied as high as possible in the arm.

Cuff of the sphygmomanometer is inflated until it registers a pressure of 40 mm. An assistant maintains this pressure throughout the operation.

Opening and closing the hand will help to make the vein prominent.

Donor's arm rests on the side of the table on an arm rest.

Skin of the anticubital space is sterilised with alcohol.

Place a pad under the elbow to keep it fully extended.

Patient is told to stop closing and opening the hand and to keep it steady.

Inject one drop of 2% novocaine solution with a hypodermic syringe just over the vein and massage the wheal gently.

When the vein is again apparent, make a tiny incision over it with the point of a sharp scalpel.

The needle (to which the rubber tube is attached and filled with citrate solution) is thrust into the lumen of the vein.

Remove to clamp.

As soon as blood is seen to flow out of the tube, put the free end of the tube into the collecting flask containing citrate solution.

Operator places his feet on a small stool under the arm rest and the bowl containing hot water (with the collecting flask in it) is placed on his knees.

Every now and then the collecting flask is rocked gently to ensure mixing of the blood and solution.

Surgeon keeps the needle in the vein steady.

When the required quantity of blood is collected, the assistant deflates the sphygmomanometer.

Needle is removed from the vein and the wound is dressed and bandaged.

II. Method suitable in a rural dispensary.

This method will be found useful when there is only one compounder to assist and special instruments are not available.

Articles required.

Two 20 cc. or even 10 cc. record syringes.

A wide bore needle or sharp transfusion cannula which fits on to both the syringes.

Citrate solution as before.

One collecting sterile bottle placed in a basin of warm water.

A bowl of sterile saline.

A small bowl or gallipot which will hold about 50 cc. of the citrate solution.

The compounder's duties are explained to him before the operation is started.

COLLECTION OF BLOOD.

Prepare the citrate solution as detailed above. Pour about 100 cc. of the solution in the collecting flask (which is placed in warm water) and the remaining 50 cc. in the sterile gallipot.

Apply a vein tourniquet in the donor's arm. Be sure that the artery is not occluded.

Fill up the syringe and the cannula (or needle) attached to it with about 2 cc. of the citrate solution from the gallipot.

Puncture the vein and draw out a syringeful of blood. In the meantime the compounder keeps the other syringe ready, filled with 2 cc. of the citrate solution from the gallipot.

Disconnect the syringe from the needle in the vein when it is full and hand it over to the assistant. The assistant at the same time hands over the other syringe already filled with 2 cc. of citrate solution to the operator. The latter at once fixes it on to the needle (in the vein) and starts drawing blood.

The assistant as soon as he receives the syringe filled with blood, squirts the blood into the citrate solution in the bottle and immediately it is emptied, washes the syringe with the normal saline by drawing it in and out. He then fills the syringe with about 2 cc. of the citrate solution from the gallipot and keeps it in readiness for the operator.

In this way the procedure goes on in rotation until the required amount of blood is collected.

If the needle gets blocked, a fresh puncture is made either in the same or in the other side.

When the blood is collected.

Pour the collected blood through two layers of sterile gauze into a sterile jug.

Keep the jug in a bowl of warm water.

DIFFICULTIES.

Sometimes the blood stops coming.

i. See that the sphygmomanometer is recording the correct pressure. In the case of a tourniquet ensure that the radial pulse is not occluded.

ii. Ask the patient to open and close the hand.

iii. Withdraw the needle a little bit.

iv. Push the needle a little further in.

If these fail—Needle is probably blocked with a clot. Inject a little citrate solution into the needle (very gently). If there is obstruction, don't use force.

If this does not rectify matters—Remove the needle from the vein.

Take another needle and puncture another vein, preferably in the other arm.

After care of the donor.

Carried on a stretcher and lies quietly for at least an hour.

May be given a hot drink or alcohol.

Sent home in a vehicle.

Reports next day for inspection of the arm.

Transfusion of the blood into recipient.

Transfusion with funnel and tube.

Instruments required.

1. A vein tourniquet.
2. Scalpel and dissecting forceps.
3. A pair of tissue forceps.
4. Transfusion cannula.
5. Funnel and rubber tube.

The arm is prepared and placed as for collection of blood.

Apply a vein tourniquet in the arm.

With a pair of dissecting forceps pick up the skin over the anticubital vein so as to make a longitudinal fold over the vein.

With the scalpel held horizontally incise the fold and make a V-shaped cutaneous incision.

Catch the apex of the V with a pair of tissue forceps and dissect out the vein.

Pass two ligatures beneath the vein.

Tie the distal ligature and cut it short.

Remove the tourniquet.

Pick up the anterior wall of the vein with forceps.

Incise the vein with the scalpel held flat.

In the meantime an assistant fixes the cannula to the funnel and tube. The funnel is filled up with the citrated blood and allowed to run just enough to drive out the air from the tube and cannula. The tube is then clamped.

Introduce the cannula into the lumen of the vein.

Tie the proximal ligature with the cannula inside the vein.

Let the citrated blood run in slowly.

As the last ounce of blood is going in—Remove the cannula and tie the ligature round the vein tightly.

Suture the skin and apply dressing.

DIFFICULTIES.

1. Occasionally the collapsed vein wall falls on the opening of the cannula and obliterates it. This may also be caused by venospasm.

For this reason, Stretton's probe-pointed cannula is very useful. The point of the probe is slightly curved forwards and thus keeps the wall of the vein away from the bore of the needle.

2. If the blood is injected too rapidly, there is difficulty in breathing and a sense of tightness in the chest.

3. Patient may get some fever after the transfusion. In some cases it comes with rigor even before the transfusion is finished. Latter is generally due to rapid injection or injection of cold blood. So the blood must be kept warm. This can be done by keeping the syringe covered with a piece of lint wrung out of hot water and changing it frequently.

It is always advisable to filter the citrate solution.

Transfusion of whole blood.

Various forms of apparatus are in the market designed for carrying out this operation. I have found that the ordinary

four syringe method is as good as any, so long as the required number of assistants are available. It has the advantage that no special instruments are required. The blood and sera are matched as before.

Articles required.

1. Four 20 cc. syringes.
2. Two bowls of warm saline.
3. Vein tourniquet.

Recipient and donor lie side by side on two tables. A table with two bowls of warm normal saline is kept at the head end of the patients. Saline is replenished when cold. Anticubital spaces of the donor and recipient are cleaned. It is better to use the wide bored transfusion needle if available, otherwise the ordinary large needles are good enough. The operator, after venepuncture, draws out blood from the donor with one syringe, disconnects it from the needle (still kept in the vein), hands over the syringe filled with blood to the first assistant, who injects it into the recipient. At the same time the second assistant hands over a clean syringe to the operator, who fixes it on to the needle (already in the vein) and draws out more blood. When the syringe is full he again hands it over to the first assistant.

The first assistant, on receiving the syringe filled with blood injects it into the vein of the recipient. When the syringe is empty, he disconnects it from the needle and hands over the empty syringe to the second assistant. By this time he receives another syringeful of blood from the operator which he fixes on to the needle and injects into the recipient.

The second assistant stands near the head of the patients with the small table containing two bowls of saline on it. On receipt of the empty syringe from the first assistant he cleanses it in one bowl containing the saline and then rinses it with the clean saline from the other bowl. After thoroughly cleaning it, the syringe is handed over to the operator.

This goes on in rotation until the required amount has been transfused.

The *difficulty* of the method is early clotting of the blood. Some people found that lubrication of the syringe with sterile vaseline after cleaning it with saline, very useful. One or two additional syringes and assistants are helpful. When clotting has actually occurred, the needle should be removed from the vein, another venepuncture done with a separate needle.

Transfusion in a small child.

In the first three months mother's blood can be used. Give 25 cc. of blood per pound of body weight.

1. When the anterior fontenelle is open.

If necessary shave the scalp and sterilise the skin. Inject a small quantity of 1% novocaine over the anterior fontenelle.

A fine trocar and cannula is used in place of the needle.

This is pushed into the superior longitudinal sinus, the point of the needle is directed downwards and backwards.

When the trocar is felt to enter the sinus, the trocar is withdrawn and blood drips from the end of the cannula.

Hold the cannula steadily and then connect it with the infusion apparatus as indicated above.

2. When the anterior fontenelle is closed.
Open the internal saphenous vein just above the ankle and use this for transfusion.

Children in need of transfusion are so prostrate that no difficulty is experienced in operating under local anæsthesia.

Dangers of Transfusion.

1. Incompatibility—Always an individual test for compatibility of blood should be carried out before transfusion. There are various sources of error in using a Group IV blood without carrying out an individual test.
2. Do not transfuse a patient who is suffering from damaged kindneys, *e. g.*, nephritis, toxaemia, prostatic obstruction.
3. Air embolism must be avoided.
4. Transmission of disease, *e.g.*, syphilis.

BOIL.

A boil or furuncle is caused by staphylococcal infection of a hair follicle, sweat or sebaceous gland and this must be realised when treating a case.

TREATMENT—

1. Don't incise a boil. Danger of incision—It is essentially a localised infection and if allowed to develop in the

ordinary line will remain so. Incision or puncture may temporarily improve the drainage but it is doubtful if any assistance is required and there is always the risk that interference may lead to extension of the infection.

2. Don't squeeze a boil. The protective leucocytic barrier that is formed round the boil will be broken down and the infection will spread, specially in a hairy area.

Apply heat to the part—Hot fomentations or antiphlogistin.

Stannoxyl may be given by the mouth, but it is very doubtful whether it is of any use.

Manganese chloride may be given by the mouth, 5 gr. a day. Intramuscular injection of colloidal manganese is best for recurring or multiple boils.

Yeast by the mouth has proved useful.

When the boil is absolutely soft and pointing and you feel that something must be done, a small hole may be bored at the softest point with a thick needle or a blunt pointed instrument by gently rotating it. If it is painful a minute drop of carbolic acid will produce the necessary anæsthsia at the site of puncture.

BREAST, ABSCESS of,

Abscess in the non-lactating breast and for cases during lactation in which the abscess is relatively localised and confined to one lobe. Aspirate it under local anæsthesia and wash out the cavity with Dakin's solution. A large needle must be used. Single aspiration is often sufficient. May be repeated if necessary but unnecessary repetition is deprecated.

For large and late abscesses incision is preferable.

BURN.

CLINICAL COURSE and Principle of Treatment.

First stage—Primary shock.
Treatment—Sedatives and warmth.

Second stage—Secondary shock.
Treatment—Intravenous injection of colloidal solution or hypertonic saline. Normal saline is harmful.

Third stage—Acute Toxæmia.
Prophylactic treatment—Coagulation of the surface with tannic acid solution.

Fourth stage—Sepsis.

Fifth stage—Healing.

TREATMENT.

IMMEDIATE TREATMENT—Warmth and morphia.

Warmth may be applied by hot water bottles or better still by a cradle fitted with electric bulbs.

Raise the foot end of the bed.

Earliest sign of secondary shock—Lowered pulse pressure with or without fall of the systolic blood pressure. Pulse pressure less than 30 mm. (in an adult) indicates onset of early secondary shock.

Advanced shock—Intravenous gum saline (6%), about 600 to 1000 cc. If there is sign of anoxæmia (rapid shallow respiration)—Carbon dioxide inhalation if possible.

In severe cases when peripheral circulatory failure is expected on the second day, extract of adrenal cortex (Eucortone) is of definite value.

LOCAL TREATMENT.

An anæsthetic may be necessary.

Take a limited area at a time. Don't expose the whole body but keep it warm.

With gauze moistened in warm saline, wipe off all detached and raised epidermis. Epidermis of fingers and palm should not be taken off (serum will ooze for a long time): Snip off the blisters and apply gauze soaked in tannic acid in these parts.

Tannic acid solution—It must be *freshly prepared* otherwise it changes into gallic acid.

2½% solution is usually recommended but latterly 5% solution have been used with better results. Some people use as strong as a 20% solution. It is better to incorporate some antiseptic in it, as 1 in 1000 acriflavine or 1% gentian violet.

The tannic acid solution is either sprayed or painted preferably with a camel hair brush, and then the surface is dried. *Spraying and drying is continued every half an hour* until a thick coagulum forms. It requires 6-8 applications.

Or, apply 5% tannic acid solution with cotton wool swab and follow this immediately by painting with 10% silver nitrate solution in the same way. A rapid coagulum is formed in this way.

Ferric chloride has recently been used in place of tannic acid. It is said that the coagulum produced is more tenacious and supple than that of tannic acid. Paint the part with Tinct. Ferri Perchloride.

After Treatment.

(*a*) General.

Extensive injury—Gum saline transfusion.
Fluid by mouth.
Rectal saline.

(*b*) Local.

Coagulum is exposed to air from the beginning and protected. Once the coagulum has hardened no more dressing is necessary.

If the patient has to lie on the coagulum, it should be covered with a thick layer of sterile gauze and the position (of the patient) is changed at intervals to allow the part to be painted with gentian violet and dried.

A cage or cradle is used to keep the bed clothes away.

Organisms gain entrance at the margin of the coagulum. To prevent this, paint the margins daily with 1% gentian violet.

No water must come in contact with the coagulum. It will immediately start severe toxic absorption. In children the buttocks etc. should be suitably protected with jaconet.

No fomentations.

The coagulum usually separates in 12-14 days.

Second week.

Raw exposed surface should be covered with a mixture of oil eucalyptus, 1 part ; zinc oxide, 2 parts and vaseline 4-8 parts.

Infected raw surface treated by antiseptic dressings. Cod Liver oil dressings have proved very satisfactory.

Coagulum should be left on until it strips off easily.

Severe sepsis demands special treatment.

Coagulum should be removed after softening it with hypertonic saline. Only HYPERTONIC saline should be used, other solutions may lead to severe and fatal toxic absorption.

SMALL BURNS.

In burns of minor degree, tannic acid may produce unnecessary destruction of the epithelium and delay in healing. For these cases 1 in 1000 solution of 5% abracide solution in amyl salicylate is very good. It has got an analgesic action as well.

Tannic acid jelly, Tannafax or Burnol (an ointment containing acriflavine) may also be used.

CARBUNCLE.

Caused by staphylococial infection of the cutis vera or corium and the subcutaneous tissue.

TREATMENT.

Autohæmotherapy—Injection of the patient's own blood round the area is well worth a trial. About 10 or 20 ccs. of blood is withdrawn from a vein and the same is injected all round the swelling.

Principle—A certain amount of antibodies are produced in the blood and its presence in a large quantity round the infected area will destroy some of the germs and toxins and prevent its extension.

Application of hot antiphlogistine.

Dessicated magnesium sulphate and glycerine paste.

I have found this very effective indeed and if it is properly used in the early stages I am sure operation may be avoided in over 80% of cases. To obtain best results it must be prepared in the following way with every attention to the details.

Magnesium sulphate is heated in a sauce pan, the water of crystallisation is driven out (the solid powder practically boils) and then it forms small white lumps, which on further heating becomes brownish. It is then taken off the fire, put into a mortar and thoroughly mixed with glycerine to form a thick paste. If it has to be stored this must be done in a thoroughly air-tight, wide-mouthed bottle, otherwise its essential hygroscopic property will be destroyed and it will be useless. It is better to prepare it freshly every time.

A thick layer of the paste is spread on a big piece of lint so that it extends over a couple of inches beyond the margins of the carbuncle and kept bandaged there. It should not be changed for 24 hours. Next day there is great relief and the pain will be much less. This is repeated every morninig until the healing stage is reached.

Staphylococcal antitoxic serum is of definite value

CARDIAC FAILURE. See Circulatory failure.

CATARACT.

Some people have observed that the aqueous humour in the anterior chamber has a high concentration of vitamin C. Disappearance of the vitamin from the anterior chamber is often associated with cataract. They believe this to be an aetiological factor in the opacification of the lens. So it has been suggested that a diet with high vitamin C content may prevent cataract.

CEREBROSPINAL FEVER. (Meningitis)

Hoyle recommends intravenous large doses of serum.

Ferri's Meningococcal Antitoxin is better than antimeningococcal serum.

Prontosil has proved very useful.

CERVIX, CARCINOMA of

EARLY DIAGNOSIS.

Schiller's new method of detection of cancer of the cervix in the very early stages is worth noting and is expected to prove of immense value in diagnosis.

Method—Aqueous Iodine Test.

It is not suitable for histological purposes, but is very satisfactory for demonstration in vivo and in the living patient.

The stratified squamous epithelium is stained dark brown while the carcinomatous epithelium and the superficial cancer layer remains quite unstained and white.

Solution used, Iodine—1 part, Potassium Iodine—2 parts, and water 300 parts.

The cervix is washed with the solution. Normal epithelium will be stained dark brown in 20-30 seconds, while the carcinomatous epithelium will remain white.

It must be realised that the nonstaining is due to absence of glycogen in the carcinomatous region (which is normally present in the cervical epithelium). In certain other conditions, which cause disappearance of the glycogen from the epithelium, the same effects may be noticed, for example,

1. Hyperkeratosis of the squamous epithelium.
2. Keratinisation developing after prolapse.
3. When the superficial layers of the glycogen containing epithelium have been rubbed off by inflammation.

The greatest value of the method lies in the detection of carcinomatous changes in the preulcerative stage. Once the condition is suspected by the above method, further steps can be taken for final confirmation of the diagnosis.

CHOLECYSTITIS.

TREATMENT.

Acute—Hot fomentations.
Calomel and saline purgative.
Mixture containing sodi bicarb and sodi salicylate.

1. General.

Avoid the following foods—Egg yolk in any form, sweet bread, brain, and excessively fatty substances ; *e.g.*, butter, cream, fried food, spices, richly cooked food ; *e.g.*, palau, curries, and coffee.

Cereals, milk, poultry and non-fatty fish should be taken in moderation.

Fruits and vegetable are allowed.

2. Drugs.

Olive oil—One teaspoonful half an hour before meals and on retiring. Addition of a little lemon juice will make it more palatable.

Urotropine in large doses, 100 gr. a day is very effective. Keep the urine alkaline with Pottassium Citras about 15-20 gr. T. D. S. otherwise the too much liberation of formaldehyde in the urine will cause irritation of the bladder.

3. Non-surgical Drainage.

Half to two ounces of saturated solution of magnesium sulphate (flavoured with a little compound tincture of cardamom) in the morning.

CHOLERA.

1. Bacteriophage treatment has not proved satisfactory, but it is still believed that it may have some prophylactic value.

15 grains of sodi. bicarbonate should be given 10 minutes before the administration of the drug.

2. Kaolin treatment.

100 Gm. of kaolin powder in 250 cc. of cold boiled water and shake it well. Give a tumblerful every half hour or hour for 6-8 doses. Smaller doses are continued for several days.

3. The standard treatment is that of Rogers. Full particulars are given in the booklet accompanying the cholera box.

4. Essential oil treatment.

Lately an old remedy for cholera has been revived with encouraging results. This is specially suitable for rural areas as transfusion is very difficult to carry out properly in a village-house with filthy surroundings. This is a mixture of essential oils as given in the following formula,

Spt. Ether......m. 30
Oil Cajaput }
Oil Cloves } ... aa. m. 5.
Oil Juniper }
Acid Sulph. Arom. m. 15.

Dose—One drachm in half an ounce of water, every half hour until vomiting and purging cease. The same dose is administered to contacts, once or twice daily for one or two days.

A useful mixture for the reaction stage is as follows :—

Bismuth. Salicylas.........gr. 15
Sodi. bicarb..................gr. 5
Liq. opii. sedativ......... . m. 5.
Gum acacia ....q..s.
Aq. Chloroform ad.......oz. 1.

At this stage, if the diarrhœa is troublesome rectal injection of tannin 1 ounce, gum arabic 1 ounce and warm water one quart is indicated. For anuria, apply poultice or dry cup over the kidney. At a later period alkalies and digitalis will be found useful.

For acidosis, which may cause coma, give 3% sodi. bicarbonate solution subcutaneously, up to 1000 cc.

5. Serum Treatment.

Encouraging results have been obtained with anti-cholera serum, if it is given intraperitoneally, before collapse sets in. It is not yet available in the market.

6. I have found extract of adrenal cortex (Eucortone) to be of definite value.

CHOREA.

TREATMENT.

Absolute rest in bed. Preferably in a dark room without many sympathisers.

Salicylates.

Arsenic as Fowler's solution. Start with [illegible] three times a day. Increase this dose by 1 m. each day until a dose 10 m. at each dose is reached.

Sedatives—Chloretone gr. 5, three times a day. Sodium luminal gr. ½ hypodermically is a powerful remedy.

Nirvanol—It is often effective in checking chorea sharply, particularly in the severe cases. It is highly doubtful if it is advisable to use an agent as toxic as this in such a self-limited disease. But it should certainly be tried when other measures have failed. Dose, 1½ gr. t.d.s.

CIRCULATORY FAILURE.

A. Central or Cardiac.

B. Peripheral.

A. Cardiac failure.

TREATMENT.

1. Rest—Absolute mental and physical rest.
   Restriction of fluid and salt.
   The arrangement of the pillows is important, as slipping down in the bed may provoke attack of dyspnœa.

2. Morphia—Most valuable drug in the acute stages of heart-failure. It acts as a specific in an attack of cardiac asthma. If acute pulmonary œdema threatens, it should be combined with atropine.

   Other hypnotics.—They may be required for a long period of chronic heart-failure.

   Heroin gr. 1/6 or 1/12 may be placed under the tongue or a linctus containing heroin gr. 1/6, codeine gr. 1/4 may be given. The latter is specially useful if cough is present.

   Paraldehyde, luminal, dial, medinal are some of the other hypnotics that may be used.

3. Venesection.—When the jugular vein stands out tense. Withdraw 12-20 ounces of blood from the anticubital vein.

4. Cardiac stimulants.

   (*a*) Digitalis.

   In auricular fibrillation.

   In heart-failure with normal rhythm, the effects are much [illegible]triking.

   Cont[illegible]ed in heart block.

   Dosa[illegible]gitalis.

   15 m. [illegible] the tincture or 1·5 gr. of leaves per 10 pounds of body weight. But the only satisfactory method is close and careful observation of the effect.

   It is necessary to allow 25 m. a day for wastage.

   Digoxin—Suitable for intravenous use.
   1/60 gr. in normal saline.
   By the mouth, one tablet (0·25 mg.) is equivalent to 15 m. of the tincture.

   Urgent heart-failure.
   One milligram of digoxin intravenously.

   Further doses of ·25 mg. by the mouth every six hours, or 1½ dr., 1 dr., 1 dr., ½ dr., ½ dr., of the tincture every 6 hours.

Moderate congestive failure.

The dosage is spread over 2-3 days. 3, half drachm doses daily, for three days.

Auricular fibrillation.

20 m. of the tincture three times a day. Some cases of congestive failure with fibrillation, may have their heart rate reduced but fail to get rid of the œdema. Diuretin may help in these cases.

Indications of overdosage of digitalis.

Anorexia, nausea, vomiting, headache, diarrhœa. Ventricular extrasystole, pulsus bigeminus or coupling of beats.

More serious indications are—Multifocal extrasystole. Undue slowing of the pulse may also occur.

(*b*) Strophanthus—For rapid action strophanthin gr. 1/120 is given intravenously.

(*c*) Adrenalin—For cardiac arrest during anæsthesia or from Stokes Adam's attack.

In peripheral cardiac failure adrenalin is used freely on account of its stimulating action on the sympathetic. The action is only temporary.

In the treatment of ordinary cardaic failure, adrenalin has no place as it raises the blood pressure and would thus increase the load upon the heart.

(*d*) Camphor.—Some people advocate it for cardiac failure in pneumonia. Gunn states that it dilates the coronary arteries and thereby provides better blood supply to the heart. Cardiazol and Cor[illegible] are synthetic camphor preparations.

(*e*) Strychnine.—Where there is peripher[illegible]ation in addition to cardiac failure and when venous engorgement is not present, 1/40 gr. is useful.

(*f*) Ether and volatile stimulants. Useful in the type known as 'heart attack'.

5. Diuretics in cardiac failure.

With rest and digitalis, the oedema disappears in about 50% of cases.

Diuretin—10-20 gr. T.D.S.

Theocin is good.

Theobromine—Gr. 10 T.D.S. is sometimes more effective than diuretin.

Euphyllin—Intramuscular injection of 0·5-1 Gm. daily. Tablets of 0·1 Gm. may be given by the mouth, 6-8 tablets a day.

Salyrgan. See also Nephritis.

Dose—Starting with 0·5 cc. and increasing up to 2 cc.

May be given intramuscularly or intravenously and should not be repeated more than twice a week. It is best given intravenously, and the intramuscular injection must not be given where there is œdema, otherwise necrosis will result. 15 cc. of a 50% solution of magnesium sulphate with 2 cc. of salyrgan and 1·5 cc. (1%) of novocaine injected into the gluteal region produced diuresis when salyrgan alone failed. It is also useful in relieving ascites of cirrhosis of the liver. Neptal and Novurit are the British preparations similar to salyrgan. Novarsurol is very toxic and has been abandoned. Salyrgan is most effective and least toxic. Novurit, given intravenously is a stronger diuretic than salyrgan and has not got any toxic effect. It can be given as a suppository, although less effective when administered this way, it is useful and safe.

B. Peripheral Circulatory Failure.

There are probably several varieties of this. In the present state of our knowledge it appears that the undermentioned factors may operate in varying degrees in different cases.

1. H substance of Lewis. This is produced when tissues are injured.
2. Dehydration—Due to hæmorrhage or severe injury.
3. Nocice[illegible]ainful) impulses. Painful impulses may cau[illegible]motor failure.

Clinical types.

1. Traumatic shock.
2. Diabetic coma—dehydration.
3. Diarrhœa.
4. Acute infections ; *e.g.*, diphtheria, pneumonia etc.

Principle of treatment.

Morphia in traumatic shock.

Strychnine by stimulating the vasomotor and respiratory centres and the nervous system generally, may be of value.

Pituitrin—Acts on the plain muscles of the peripheral arterioles and also on the capillaries and thereby may be useful when excess of histamine bodies depress them.

Coramine—Stimulates the medullary centre and so may be useful when its depression is a factor in producing peripheral failure.

Injection of fluids—For dehydration in diabetes, diarrhœa and shock.

Hydrotherapy—Tepid sponging improves the capillary tone and so prevents peripheral stasis.

Digitalis is quite useless in all forms of peripheral failure.

CORAMINE.

Best restorative after respiratory failure during anæsthesia. Dose 5-10 cc. intravenously.

Good in asphyxia neonatorum and useful in low blood pressure from vasomotor collapse or shock.

COLITIS

I. Mucous.—It is essentially a very chronic disease and will take months to effect any cure. It is better to warn the patient about this from the beginning.

TREATMENT.

Removal of Mucus.

1. Give an enema.
2. Irrigation of the lower bowel, 15 minutes after evacuation by the enema, with a long tube. Insert a second catheter in the rectum to ensure free outflow of the fluid without causing any distension of the rectum.

   Plain water slightly above body temperature is the best fluid to use for irrigation. It is done every two days for a week and then at longer intervals. The irrigation is done for about an hour at a time.
3. Diet—Exclude excess of roughage from the diet.
4. The following mixture is of value.

Tr. Hyocyamus	...	Dr. ½.
Tr. Belladonna	...	m. 6.
Sodi Bicarb	...	gr. 20.
Tr. Zingiberis	...	m. 15.
Spt. Chloroform	...	m. 20.
Aq. menthi pip.	...	ad oz. 1.
		T.D.S.

II. **Ulcerative.**

TREATMENT.

Diarrhoea—It can only temporarily be stopped by Bismuth or Calcium salts.

Acetyl Tannic Acid (Tannigen), 3-10 gr. every four hours may be given.

Diet—Soft diet with no roughage.

Calcium and Parathyroid.

Irrigation with Argyrol (1 in 100), Protrargol (1 in 500) or Silver Nitrate (2%).

CORNEAL OPACITY.

Of recent years good reults have been reported by using 2% Quinine Bisulphate ointment, twice a day.

CORONARY THROMBOSIS.

The clinician must be able to diagnose the condition immediately as on prompt treatment depends the life of the patient. Lot of work has been done on this subject in recent years and it is not so uncommon a disease as was previously believed. To-day it is easy to diagnose the condition, if only one remembers its possibility.

Pathology—The obstruction is usually due to formation of thrombus on one of the atheromatous plaques.

Clinical Features.

Sex—About [illegible] of k[illegible]e patients are males.
Age—Genera[illegible]le aged people, between 40 and 70.
Onset—Sudde[illegible]

May occur at any time but most commonly when at *rest*, very often during sleep.

Sometimes there may be one or two minor premonitory attacks a day or two beforehand.

About 15% of the patients die suddenly.

Pain—Usually the most important symptom.
Anything from intense agony to dull ache.
It is usually substernal, sometimes epigastric.
The patient may writhe in agony or walk about.
There is no relief in immobility as in angina of effort.
It may last from hours to days.

Physical Signs.

There may be none.

Weakening of the mitral first sound may be present.

Gallop rhythm is a common important symptom.

Murmurs usually absent.

Apex beat may be weak.

Pericardial friction when present is a valuable diagnostic sign.

Signs of heart-failure.

Fever—Immediately after infarction, temperature is subnormal. Later on there may be fever, which may persist for several days.

Pulse—Usually small and weak.

Vomiting.

Blood pressure falls by about 25%. Urine is diminished.

Dyspnœa.

Shock.

There is usually great mental anxiety and fear of impending death.

Diagnosis—Four main symptoms, pain dyspnoea, shock, vomiting.

DIFFERENTIAL DIAGNOSIS.

1. Angina pectoris (Parkinson & Bedford quoted by East and Bain).

	Angina Pectoris	Coronary Thrombosis.
Onset	During exertion	Usually during rest or sleep.
Attitude	Immobile ...	Restive : may walk about.
Site of pain	Sternum ...	Sternum or lower.
Duration	Minutes ...	Hours or days.
Dyspnoea	Absent ...	Usually severe.
Vomiting	Rare ...	Common.
Shock	Absent ...	Present.
Sweating	Slight ...	Severe.
Aspect	Normal ...	Ashen pallor.
Pulse	Unchanged ...	Feeble : often rapid.
Temperature	Unchanged ...	Subnormal at first ; fever afterwards.
Blood Pressure	Unchanged or raised	Lowered.
Congestive failure	Absent ...	Often follows.

Heart Sounds	Unchanged	Gallop rhythm or pericardial friction may appear : mitral first sound weak.
Leucocytosis	Absent ...	May be present.
Action of nitrites	Often relief	No relief.

2. Acute Abdominal conditions ; *e.g.*, perforated gastric ulcer, gall-stone colic, acute pancreatitis.

In coronary thrombosis, there will be signs of cardiac failure, dyspnoea, weakening of the mitral first sound, pericarditis, the abdominal muscles are rarely so rigid as in early peritonitis.

Treatment.

Morphine should be given at once, ¼ to ½ grain and as often as required to stop the pain.

Absolute physical and mental rest.

Digitalis should be given if any of the signs of heart-failure appears or if auricular fibrillation has been provoked. In the first 24 hours, 2 drachms of the tincture or its equivalent. After this, not more than 1 drachm daily for 3 days.

After treatment.

Absolute rest in bed for at least a month.

Then complete mental and physical rest for another two months and then partial rest for another period of three months. He should thereafter live well within the limits of his heart and must avoid anything that produces dyspnoea or pain.

DEFICIENCY DISEASES IN PREGNANCY.

The pregnan[illegible] should get a mixed diet consisting of fresh foods, m[illegible]rbohydrates, low protein, low fat and a sufficient amou[illegible]itamins and salts. Expensive preparations and proprietary foods will be unnecessary if the diet were mixed and adequate.

The fundamental difference between the deficiency symptoms occurring in the pregnant and the non-pregnant states is the relatively rapid onset of the disturbances in pregnancy. It must be realised that the deficiencies if they are not too acute, will produce only a latent effect. Nothing grossly wrong may be detected, but all the same it will hinder the proper development of the foetus and the child and undermine the health of the mother.

Foetus is a parasite. Like all parasites it does not care what happens to the host, so long as it has its own share.

When the latter cannot supply from her reserve store, it robs the mother of her most vital substances and naturally her system is depleted of these. So the first essential in the dietery in pregnancy is to safeguard against this depletion.

The chief deficiency diseases in pregnancy are,

I. Calcium Deficiency.

Manifestations—In minor degrees it will produce pains and aches in the joints, dental troubles, tetany and uterine intertia and in major degrees, osteomalacia in the mother and rickets in the child.

Causes.

1. Deficiency of calcium and phosphorus in the diet.
2. Deficiency of Vitamin D.
3. Excess of cereal content of the food.

Prevention.

1. Liberal amount of milk in the diet; at least two pints a day.
2. When there is possibility of Vitamin D deficiency, supply it in one of the commercial forms.
3. If there is reason to suspect calcium deficiency, this should be supplied.
4. Cut down the cereal element in the carbohydrate content of the food and replace this by carbohydrates from other sources *e.g.*, potatoes, carrots, cocoanuts, fruits, beet root, vegetables, [illegible] etc.

II. Deficiency of Vitamin A.

This will cause increased liability [illegible] infection. In India where the average doctor has to work under conditions far from ideal, he would do well not only to diet but to prescribe one of the concentrated vitamin A products available in the market.

III. Deficiency of Vitamin B.

Manifestations.

1. Anæmia.
2. General ill health.
3. Peripheral neuritis.

IV. Deficiency of iron or Castle's extrinsic or intrinsic factor. See also anæmia.

Manifestations.

1. Anæmia.
2. Fever.
3. Miscarriage.

V. Deficiency of Iodine.

It produces lessened resistance of the body to infections and liability to sterility and miscarriage.

Fish, specially sea fish is an important source. If deficiency is feared, 5 m. of Lugol's Iodine should be given in a cup of milk.

DIABETES MELLITUS.

The treatment of diabetes in rural areas has always been very difficult. Introduction of insulin, although one of the greatest achievements of modern medicine, has made this hundred times more difficult.

Every dispensary should keep Benedict's solution for a rough estimation of the quantity of sugar in the urine. Estimation of blood sugar, although it has been made easy and mechanical is not yet feasible in rural dispensaries.

BENEDICT'S SOLUTION.

Preparation.

170 Gm. of crystallised sodium citrate and 100 Gm. of sodium carbonate are dissolved in 700 cc. of water. 17·3 Gm. of fine crystallised copper sulphate is dissolved in 100 cc. of water. The copper sulphate solution is poured into the former solution and the volume made up to 1000 cc. with addition of water. [illegible]

TESTING SUGAR.

Take 5 cc. of the reagent in a test tube and to it add 8 drops of urine. It is boiled over a flame for 2 minutes and then allowed to cool. The following will indicate a very rough estimation of the quantity of sugar present.

1. Greenish opalescence, no red colour, no precipitate —0.1%.
2. Same as above but slight yellowish precipitate. fluid blue on standing—0.2%.
3. Green colour with slight orange precipitate ; fluid blue on standing—0.3%.

4. Definite orange precipitate; fluid still blue on standing—0.5%.
5. Heavy orange brown precipitate; still some blue colour in the fluid on standing—1.0%.
6. Bright heavy red precipitate; blue colour of the fluid has almost disappeared—2.0%.

Although it is a very rough estimation, it will give the practitioner an idea whether the sugar is increasing or decreasing in the urine.

DATA FOR TREATMENT.

Roughly an individual requires the following amount of calories to maintain the body. It also varies with the age and surface volume of the individual.

At rest, 12 calories per pound of body weight.

With sedentary habits, 15-20 calories per pound.

With hard work, 25-30 calories per pound.

Caloric value of the different constituents of food.

1 Gm. protein = 4 calories.
1 Gm. carbohydrate = 4 calories.
1 Gm. fat = 9 calories.

CALCULATION OF THE PROPORTIONS of the various food constituents.

The total number of calories required is divided between protein, carbohydrate and fat in the following manner: Protein, $\frac{1}{2}$-$\frac{3}{4}$ Gm. of protein per pound of body weight. Carbohydrate, find out the carbohydrate tolerance (see below) of the patient and that is the amount of carbohydrate that may be given.

Fat. The proportion of fat should bear a definite relation to the carbohydrate, otherwise ketosis will result from unburnt fat. The proportion should be 1 of carbohydrate to 1·3 of fat, or in other words, the total amount of fat should not be more than $1\frac{1}{3}$ of the carbohydrate.

OUTLINE OF TREATMENT.

1. Find out the carbohydrate tolerance of the patient.

(The maximum amount of carbodhydrate that the patient can metabolise without passing sugar in the urine).

(*a*) Starvation for 1—4 days with only water, tea, cofiee (without sugar) and meat broth.

As soon as 24 hours' urine is free from sugar, go on adding 5—10 Gm. of carbohydrate and the proportionate amount of fat and protein until sugar just appears in the urine. The carbohydrate tolerance of the particular patient is just short of this.

(b) Give the patient a standard diet containing 50 Gm. of carbohydrate and known proportionate amounts of protein and fat. If sugar appears in the urine, gradually cut down the carbohydrate until no sugar appears in the urine. Conversely, if no sugar appears in the urine with 50 Gm. of carbohydrate, gradually add more carbohydrate until sugar just appears in the urine. The carbohydrate tolerance will be just short of this.

In other words this is the maximum amount of carbohydrate that may be allowed without any insulin.

2. Find out the caloric requirements for the particular patient from the weight and nature of work.
3. From the data given above, find out the amount of food that may be allowed for him.
4. Now decide if the amout of food allowed is enough to provide the calories required to maintain his body without appreciable loss of weight.

Example.

Suppose the weight of the patient is 120 pounds and his carbohydrate toleran[illegible]0 Gm. per day. So

Protein (½—[illegible] of k[illegible] (e[illegible]r pound) = 70 Gm. = 280 calories.
Carbohydrate [illegible]nce) = 60 Gm. = 240 „
Fat (1.3 of carbohydrate) = 80 Gm. = 720 „

Total calories 1240

His total requirements is (with moderate work) say 1800 calories. So he has to be provided with 500 more calories and this can be done by increasing the protein by 10 Gm., carbohydrate by 30 Gm. and fat by 40 Gm.

Insulin has to be given to help the metabolism of the 30 extra Gm. of carbohydrate.

Conversely, his work can be cut down and the body can be maintained at rest with the amount of carbohydrate required for his system at rest.

Insulin.

If it is possible to maintain the patient's health without insulin, make a detailed list of diets for him for full 24 hours and hand it over to him. It is better to give him several lists of 24 hours' diets so that he can vary them at his will. For the preparation of diets see Appendices II and III.

If the diet permissible does not provide the amount of calories required, he must either.

(i) Cut down his work and live within the limits of his carbohydrate tolerance. Just as a patient with heart disease must live within the limits of the power of his crippled heart,

or (ii) Supplement the requirements with insulin.

In other words if the patient cannot afford insulin, he must live within his sugar tolerance. If he can afford insulin, the extra amount of carbohydrate is given with insulin with proportionate increase of fat.

It is better to start insulin with 5 units in the morning and 5 units in the evening and then gradually increase both the carbohydrate and insulin, until the required amount of carbohydrate is reached. The insulin should be given in two doses every day, half an hour before the main meals.

The most important factor in the successful administration of insulin without blood sugar estimations is maintenance of a constant diet with slow increase of insulin, until the correct dosage is established.

Impending symptoms of hypoglyca[illegible]ld be explained to the patient. Patients under insulin tr[illegible] should always keep some sugar at hand and as soon as on[illegible]ware of the early symptoms of hypoglycæmia, he should take it, if possible with some orange juice.

Blood sugar estimation should be done once a month.

Preparations of insulin for oral administration.

Synthalin—Not successful.

Oralin (Beng. Imm.).

Pancreaptin.

Introduction of Zinc Protamine Insulin has made a great advance in insulin therapy. It is very slowly absorbed and therefore the effect lasts for a long period.

Where fasting blood sugar estimations are not available,

two specimens of urine are taken before breakfast ; one immediately on waking, and to avoid any sugar that might have entered the bladder soon after bed time, a second just before breakfast to indicate the approximate level of the blood sugar at that time. Even when the first specimen contains sugar the second is often sugar-free, indicating that the dose of zinc protamine insulin is sufficient to last for 24 hours. If the second specimen contains sugar, the dose must be increased. If there are symptoms of hypoglycæmia (sweating, palpitation, trembling), between midnight and breakfast, the basal dose is too high and must be reduced. In most cases the basal dose is between 20-30 units and in more severe cases 30-50 units. Carbohydrate must be spread throughout the day in small and frequent feeds.

Differential Diagnosis of Diabetic Coma and Hypoglycæmia.

	Diabetic Coma	Hypoglycæmia
Onset	Gradual	Very sudden
Skin	Usually flushed or cyanotic. Dry	Usually very white, may be normal. Sweating common
Tongue	Dry	Moist
Breath	Smells acetone	No acetone smell
Respiration	Deep	Shallow.
Pulse	Rapid, feeble	Normal or bounding
Eyeball tension	Low	Normal or raised.
Urine	Sugar and diacetic acid	None.
Blood pressure	Low	Normal.

Treatment w[illegible] carbohydrate aud low fat diet.

Recently very [illegible]d results have been reported with high carbohydrate and low fat diet. The amount of fat does not exceed 50 Gm. per day.

Treatment of Diabetic Coma.

1. 50—100 units of insulin. Give one-third intravenously and two-thirds subcutaneously.

2. Glucose—Give as many grammes of glucose (as units of insulin) by a stomach tube.

3. Sodium bicarbonate—One Dr. may be given every hour.

4. Combat dehydration.—3 to 6 pints of saline must be given intravenously for over 1—2 hours until the tension of the eyeball is normal and blood pressure over 100 mm.

5. If at the end of three hours, the patient is not out of coma, examine the urine, after catherisation if necessary, and repeat half the amount of insulin subcutaneously and give half the amount of glucose already given.

DIARRHŒA, CHRONIC.

Three main types—Fermentative, putrefactive and fatty.

1. **Fermentative**—Caused by hurrying of unabsorbed putrefactive sugars and undigested starch into caecum, where the intestinal contents come to rest for the first time and absorption is slowed down, resulting in fermentation.

2. **Putrefactive**—Occurs in more severe cases in which the inflamed and irritated intestine pours out an albuminous secretion which itself undergoes putrefaction in the lower ileum and cæcum.

3. **Fatty**—Diarrhœa begins when absorption is seriously impaired and fat is excreted in large quantities, usually as soaps. There is also faulty absorption of sugar and amino acids. Faulty absorption may lead to deficiency diseases, *e.g.*, rickets, tetany, anæmias, scurvy etc.

DIAGNOSIS & TREATMENT.

1. FERMENTATIVE.

Colour of stool, pale yellow.

Stool has a sour smell and acid in reaction. (Beware of contamination with urine).

TREATMENT.

Bed.

Diet—Exclude all carbohydrates from the food for a few days.

Foods allowed—Coffee or tea with very little glucose or sugar and cream, eggs, jelly, fish, butter, fowl, beef steak.

When diarrhœa ceases gradually add carbohydrates, *e.g.*, milk puddings, sponge cakes, murmura, (muri) khoi (phulia), dry toast and later bread or chapati.

Restrict vegetables, specially those containing much intracellular starch, *e.g.*, turnips, carrots, potatoes, etc.

Green vegetables may be added in puree form, boiled and then strained.

Drugs—Of no use. Malt extracts may be given.

2. PUTREFACTIVE DIARRHŒA.

It is a more serious condition.

Stools—Dark in colour, foul smell, alkaline in reaction and more fluid than in fermentative.

See if there is achlorhydria. If so, dilute hydrochloric acid 1 or 2 drachms in a tumbler of water with orange juice and sugar, with meals.

TREATMENT.

Fast for two days. Tea with sugar or glucose, barley sugar may be allowed.

Then try pure milk, two pints, and watch the results. If favourable add more until 1200 calories is reached. Milk being tolerated, milk puddings, corn flour preparations, biscuits, toasts, butter may gradually be added.
Fish, meat, eggs, must not be given before 2—3 weeks.

Avoid foods rich in cellulose, *e.g.*, green vegetable salads, fruits.

If milk is not tolerated—Butter milk or whey. Failing this try one of the freak diets (see below).

Drugs—Mist. Cræta is the only one which may be useful in certain cases.

Freak Diet.

(*a*) Apple diet. See dysentery.
(*b*) Banana diet, 10—15 bananas per day and nothing else.

3. FATTY DIARRHŒA.

Stool—Large, greasy, offensive.

Cause—Fat indigestion.

The irritating factor appears to arise from cereal starch and some sugars, of which cane-sugar and lactose are the chief ones.

Proteins are well tolerated and milk fat is not only tolerated but fairly well absorbed.

Principle of Treatment.

(i) Provide carbohydrate in acceptable form, *e.g.* banana.

(ii) Make up the loss of calories by a fair ration of fat or milk fat.
(iii) Meat protein.
(iv) Give calcium, iron, Vitamin D and liver factors.

Dietetic therapy.

Diet of sugarless milk.
Preparation of milk.
Gelatin—4 sheets.
Callard's Prolacto flour, one packet.
Liq. Potassi, half strength $2\frac{1}{2}$ ounces.
Thick cream, 7 ounces.
Callard's saccharin elixir, 15 drops.

Place the gelatin in a sauce-pan, add half a pint of boiling water and stir and dissolve.

Take Prolacto flour in another pan, add half pint of cold water, stir and dissolve.

Add Liq. Potassi and pour the gelatin solution in this.

Pour in a bottle and add cream and cold water to make 4 pints.

Lastly add saccharine elixir, shake. Keep in a cool place. Shake before use.

TREATMENT.

Bed.

No bread or buns or chapatis.

Milk (as above) hourly feed, total 80 ounces a day.

Banana—Added on the third day in the evening and gradually increased.

Some glucose may be given,

When stools are normal—Carrots, peas, beans. Spinach (palak) very gradually and later on apples and oranges. Each addition carefully watched.

For deficiency of vitamins or inorganic elements add proprietary preparations.

DIARRHŒA OF INFANTS.

Severe form

Stools—Watery, yellow green, yellow or sometime brown.
Motions are usually acid and offensive.

Fever—The temperature may rise to 102° or 103°. In some of the worst cases it may be subnormal.

Vomiting—As a rule it is present.

Loss of weight—May lose 1—2 pounds in a few days.

Signs of collapse,

Fontenelle and eyes sunken.
Pinched appearance.
Pulse rapid.
Extremities cold and blue.

Nervous system—First restlessness and this is replaced later by drowsiness.

Toxæmia—Acidosis ; breathing is rapid and irregular.
Urine—Small in amount.

TREATMENT.

It is a serious condition and must receive prompt and active treatment.

Immediate.

Stop all food for 12—48 hours ; until the acuteness of diarrhœa has subsided.

Give only boiled water, weak tea, glucose, rice water or raisin water.

Plenty of water must be given to combat the dehydration. Wash out the stomach with sodium bicarbonate solution, one ounce in a pint of water, and irrigate the colon with water or saline.

If collapsed—Brandy, well diluted, 5—10 drops every two hours.

Strychnine and camphor may be required.

To replace excessive loss of fluid, normal saline subcutaneously.

Later.

Diet. One has to feel his way about the diet. Give small feeds and slowly and gradually make further additions.

Breast milk, if available, is always the best.

If artificial food is being given—Cut down the fat to minimum.

Other methods of feeding—Boiled skimmed milk (peptonised or plain), dried skimmed milk, or some form of acid skimmed milk.

If there is iliocolitis as well—Malted food or malted milk is well tolerated.

Drugs—In acidosis, sodium bicarbonate with or without glucose must be given.

DIARRHŒA, GREEN of breast fed babies.

TREATMENT.

Do not stop breast feeding.

Mother—A dose of Eno's fruit salt or some other mild saline purgative every morning.

Nipples must be kept clean.

She must avoid constipation and drink a glass of water before each breast feed.

Breasts should be alternately hot and cold sponged for 15 minutes twice daily and they should be massaged (from periphery towards the nipple).

Baby—Mouth must be kept scrupulously clean.

Half an ounce of boiled water with 2 gr. of sodium citrate before each feed.

Feeding at both breasts for 7 minutes every 3 hours.

Between the feeds, give the baby a mixture of $\frac{1}{4}$% sodium bicarbonate and $\frac{1}{4}$% saline with a little saccharin, as much as the baby will take. If oedema appears, stop saline but continue the sodium bicarbonate solution.

Weigh the baby before and after each feed and find out how much he is taking at each feed.

1. If less than the correct quantity (see infant feeding)—Supplement the feeds with whey or skimmed milk and water. Dilute the feeds with boiled water, first month 1 in 2, second month 1 in $1\frac{1}{2}$ and third month 1 in 1. If the child is very feeble, dilute with whey.
2. If more than the correct amount—Cut down the time at the breast.

If it is a very advanced case—Supplant one or two breast feeds with whey or skimmed milk.

If the child is having frequent green motions—Give a warm water enema with catheter.

If the buttocks are sore—Apply zinc oxide and castor oil.

If the bowels move immediately after each feed—Give Tinct. Camphor Co. 5 m. before each feed.

DIPHTHERIA.

The following mixture is very useful and should be used in addition to serum treatment and always until the serum is available.

Hydrarg. Perchlor.	gr.	1
Potassi. Iodide	gr.	30
Glycerine	dr.	2
Aqua ad	oz.	8

For an adult one table spoonful at a time is a safe dose. The mixture is slightly gargled and then swallowed.

In all cases of diphtheria, strychnine injections are very useful. It will often prevent paralysis.

When serum is available, in cases of true diphtheria usually 12,000 to 16,000 units are required. In severe cases of laryngeal diphtheria 24,000 to 48,000 units should be given. If necessary this has to be repeated on two or more successive days.

Glucose is the chief auxilliary measure in combating toxaemia. Blood transfusion should be done, if possible, in cases of malignant diphtheria.

DYSENTERY.

Amœbic.

TREATMENT.

Emetine Hydrochloride, one injection daily (1 gr. for adult, 1/3 gr. for children of eight and 1/6 gr. for younger children) for six days and then, one injection daily of just one-half of these doses for another six days.

Rest for ten days.

Then another course of emetine (half dose) injections, or better still Emetine Bismuth Iodide, 1 gr. three times a day.

NOTE—This full course is very necessary to effect complete cure and to prevent relapses and complications later on.

Diet—First few days, water, egg albumin, barley water, rice water, *kanji*, later milk diluted or citrated.

Recently arsenicals have gained some reputation in the treatment of the disease.

1. Stovarsol—4 gr. three times a day for 7 days.

Rest for 7 days and then another course for 7 days.
Some prefer to combine stovarsol with Emetine hydrochloride giving full doses of each drug on alternate days for two weeks.

2. Carbarsone—Recently good results have been reported by Chopra. It is much less expensive. (Costs about Rs. 5/- a course). Dose ·25 GM. twice daily for 10 days.

Yatren.—More useful in chronic amœbic dysentery.

After a saline purge on the previous night, 2-3 pills (4 gr. each) thrice daily.

Most people are now using yatren by the rectum and Emetine Bismuth Iodide simultaneously by the mouth.

An enema of one pint of sodi. bicarbonate followed by 10 ounces of 2½% solution of yatren.

Kurchi—Infusion from the bark is a popular antidysenteric remedy. Better results have been obtained with Kurchi Bismuth Iodide, 4 gr. twice daily by the mouth for 10 days.

Bacillary.

DIFFERENTIAL DIAGNOSIS from amœbic dysentery is difficult without laboratory examinations.

Clinically, a severe onset and rise of temperature points to the bacillary form.

The large number of pus cells in the mucoid stool of bacillary dysentery give it a white appearance, while in the amœbic cases the colour is brown or greyish green.

The blood in the bacillary cases is brighter.

The mucus of bacillary dysentery stool practically wholly consists of an exudate made up almost entirely of pus, intestinal epithelial cells, and large macorphages.

It must be remembered that the excretion of Entamœba Histolytica is frequently intermittent, hence several examination of fæces at appropriate intervals are often necessary to exclude the amœbic form.

It must be realised that Bacillary dysentery is far more common than amœbic in this country.

TREATMENT.

MAGNESIUM SULPHATE 60 gr. every hour until a watery

stool containing fæcal matter is obtained. Then this is given every 4 hours.

Some prefer to use castor oil.

If there is too much dehydration, saline should be given intravenously first and then subcutaneously.

SERUM—Polyvalent Antidysenteric Serum.

Cases of ordinary severity—Single subcutaneous dose of 40 cc.

In other and more severe cases, it may need be repeated in 12 to 24 hours and again in 48 hours.

Recently large intravenous dose of 5 to 150 cc. has been advocated. It would hardly be possible to obtain such large quantities in rural areas.

It must be diluted with equal volume of normal saline and given very slowly.

Before giving intravenous serum in any disease, make a skin test and be sure that the patient is not sensitive to the serum. For methods of skin test and desensitisation, See Serum Sickness.

BACTERIOPHAGE—In some cases the results are very satisfactory and it acts like magic and in others very disappointing So at the present state of our knowledge it is not a reliable drug. My impression is that it is useful in acute cases.

Method of administration—No food except plenty of water by the mouth.

15 gr. of sodi. bicarbonate should be given 10 minutes before the administration of the drug.

One ampoule (2 cc.) three times a day, for two days. If there is no improvement in two days, it should be given up.

APPLE DIET.

The treatment consists simply of feeding the patient for two days on *ripe mellow apples* which have been peeled, freed from seeds and core and grated. It is given *ad. lib.* to adults. For children 3 to 6 ounces per meal, 5 or more meals per day. After two apple days return gradually to full diet ; for the first two days, diet rich in protein and poor in milk and is ordered. If the diarrhœa recurs a repetition of the apple diet usually cures the condition.

It has been very successfully used in Germany.

DYSPEPSIA.

The success of treatment depends on being able to determine the cause. First of all be sure that it is not due to organic disease in some other part of the body, *e.g.*, chronic nephritis, cholecystitis, heart or liver disease. When organic lesions have been excluded, treatment of functional dyspepsia may be carried out according to the following plan.

Outline of Treatment of the main types of functional dyspepsia.

1. Nervous indigestion.

Patient is a psychasthenic and the gastro-intestinal syndrome frequently varies. There may be symptoms of gastric indigestion, palpitation,poor circulation, fatigue and eructation of large amounts of gas. They usually have tried all medicines and quack remedies.

MANAGEMENT.

History—Take a careful and sympathetic history and listen to all his ailments. Then examine him thoroughly and *Assure* him that he will be cured.

Advise rest so long as it can be obtained with least expense and loss of income.

Secure good sleep.

Physical therapy as excercise and massage will help.

Diet—The patient has to be taught to eat again starting with the things that cause the least trouble and gradually increasing. It should not be too restricted or monotonous.

Drugs—Hardly of any use.

Those who get relief by alkalies will be found to be suffering from hyperchlorhydria or ulcer.

2. Hyperchlorhydria.

More common among young and middle aged people.

Pain comes on an hour or more after food. This is usually associated with heart burn, eructation of acid fluid, occasionally very acid fluid which burns the throat and mouth. This is more likely to occur after light and starchy meal than heavy meat diet.

TREATMENT—Sodium bicarbonate gr. 15, repeated if necessary with warm water when the pain comes.

Other antacids as in the treatment of gastric ulcer.

3. Pylorospasm.

Pain, sometimes very intense, eructation and vomiting, sometimes without nausea.

A firm mass may be palpable in the epigastrium.

TREATMENT—During attack, hypodermic injection af atropine sulphate.

Tinct. Belladonna and nitrites have been advocated.

Put the patient an a dry diet that will be difficult to vomit.

4. Hypochlorhydria (achylia gastrica)

Loss of appetite, sense of fullness after eating. Nausea and vomiting are rare. Sometimes periods of diarrhœa and constipation alternate.

TREATMENT.

Hydrochloric acid—30 m. of the dilute acid at the middle of the meal and again at 15 minutes intervals for an hour after the meal.

It should be given as concentrated as possible, consistent with the comfort of taking it. Two ounces of water of a non-alkaline nature, *e.g.*, grape juice, lemonade, is enough for 30 m. of the dilute hydrochloric acid.

Excessive use of other fluids with meals should be avoided. A dry diet should be advised.

Digestive ferments are without value in the absence of the acid, and they are produced in the stomach when sufficient amount of acid is administered.

5. Atony.

Stomach fails to empty itself and becomes chronically dilated. There is a feeling of fullness that appears long before hunger is satisfied and lasts for a long time after it has been taken.

MANAGEMENT—Diet restricted to easily digestible foods. Small quantities of food to be taken at a time. If hyper or hypo-acidity is associated, it should be treated.

Strychnine, which has a reputatton in this condition, is more or less valueless.

6. **Intestinal Fermentation.**

Patient complains of distension, abdominal discomfort or even pain and the daily passage of several liquid or semi-solid stools accompanied with much gas.

Radical readjustment of dietary is necessary. A diet rich in protein and fat and poor in carbohydrates should be advised.

Bacillus acidophillus or *Dahi* may be useful.

Carminatives may help.

EAR, AFFECTIONS, OF.

1. **Boil or furuncle in the meatus.**

Localised swelling in the meatal wall. Later on oedema and tenderness develop. In late cases it may be difficult to differentiate from the mastoiditis,

DIFFERENTIAL DIAGNOSIS FROM MASTOIDITIS.

	Furuncle	Mastoiditis.
1. History	Furuncles elsewhere	Adenoids, throat infection, coryza, bathing etc.
2. Fever, malaise	Seldom severe	May be well marked.
3. Early tenderness	Greatest over Tragus	Usually behind the ear.
4. Meatal oedema	May occur anywhere and many occlude the meatus	Postero-seperior.
5. Tympanic membrane	Normal	Injected or perforated.
6. Discharge	Mucopurulent usually scanty	Mucopurulent, often profuse
7. Deviation of pinna.	Nothing particular	Pinna pushed forwards and outwards.

TREATMENT.

Mild cases.

Calomel.

Large fomentation on the ear.

If there is not too much oedema blocking the meatus, glycerine with 10% icthyol drops every 4 hours.

If pain is not relieved in 48 hours or if the pain is severe operation is indicated. Drops of Sedonan relieves the pain.

OPERATION,

A general anæsthetic should be given. The most prominent part is deeply incised with a narrow pointed bistoury in a direction parallel to the axis of the meatus, the incision going down deep to the bone or cartilage.

2. **Otitis media.** See the main Subject infra.

EPIDEMIC DROPSY.

TREATMENT.

1. Cut out rice from the dietery.
2. Diarrhœa, if mild, requires no treatment. If severe, 15-30 m. Liq. Ferri. Perchlor. is useful.
3. Weak heart—Strychnine.

   The most efficacious drug for heart symptoms is Tinct. Ephedrine prepared from an Indian species E. Vulgaris Rich. The Indian variety contains larger quantities of pseudo-ephedrine and comparatively less ephedrine compared with the Chinese varieties.

The pseudo-ephedrine stimulates the myocardium and stimulation of the accelerate mechanism by ephedrine, makes the Tinct. of Indian Ephedrine very valuable.

Digitalis is not only ineffective but may be harmful.

4. Oedema of the lungs—Venesection and withdrawal of 10-12 ounces of blood.

EPILEPSY.

TREATMENT,

Improve the general condition of the patient.

Bromides—Begin with 20 gr. T. D. S. If this prevents the attacks but brominism appears, decrease the dose. If this is inadequate, increase the dose gradually and cautiously.

Bromide therapy is more effective if the patient is kept on a salt free diet.

Luminal—½-2 gr doses. It is better to give two doses a day. In resistant cases the dose has to be very cautiously increased. Prominal has proved to be better than luminal.

It is alleged that bromides lose their effect after unsuccessful administration of luminal. Another serious feature of luminal medication is that whether the drug is successful or not, stopping the drug is almost always followed by increased incidence and severity of the fits.

Ketogenic diet has been recommended, but it is difficult, if not impossible, to carry out in rural practice.

Snake venom therapy has recently been used. Crotalin, Cobra toxyl (See also Venom, snake).

Ephedrine is useful in some cases.

STATUS EPILEPTICUS.

Clear the bowels with a rapidly acting purgative.

Apply cold water or ice pad to the spine.

Large doses of bromides, chloral, paraldehyde, morphine or sodium luminal.

Morphine is very useful in stopping the convulsions, 1/6 gr. hypodermically.

Paraldehyde per rectum in olive oil is very good, about 6 dr. in 8 oz. of olive oil.

Intramuscular injection of magnesium sulphate.
(See Tetanus)

Hyoscine may be used.

Supportive treatment is most important. Atropine, alcohol digitalis, caffiene, nutrient enemata etc.

ERYSIPELAS.

Prontosil by mouth or intramuscular injection (See Puerperal Sepsis)

EUSTACHIAN CATARRH.

Inhalation of Benzedrine.

EVIPAN, Anæsthesia.

It is given by intravenous injection. The anæsthetic action of the drug is extremely rapid and very short-lived. Thus its great use is for short and single handed operations.

Evipan is supplied in powder form in ampoules to which distilled water from another ampoule is added. There is 1 Gm. powder and 10·5 cc. of distilled water in each ampoule. 3 cc. of this solution is an average dose but it also depends on the weight and age of the patient and the length of time that anæsthesia is required.

Technique.

The dry substance is dissolved by squirting 10 cc. of the distilled water into the ampoule in which the former is contained ; the resulting solution is shaken up.

The dose injected is from 2·5 to 3 cc. This amount is injected in about 10 seconds and then allow a pause of about 30 seconds. At the end of this time consciousness is usually lost. If not, further 2-3 ccs. at the rate of 1 cc. every 10 seconds, are injected and the minor operation performed.

Duration of anæsthesia, 10-20 minutes after an average dose.

Always use freshly prepared solution. If there is any excess left after injection, it should be discarded.

Dangers—Fall of blood pressure and depression of the respiratory system. For respiratory failure give an injection of Icoral. Dose 2 c.c. for adults given intramuscularly. Coramine and lobeline are also useful.

Pentothal—A new barbiturate for intravenous anaesthesia. Ampoules of 1 G to be used with 19 cc, of distilled water or saline. 3 cc are injected in 7-15 seconds. The patient is generally unconscious at the end of a minute after injection. If this is not sufficient another cc is given slowly (taking 10 seconds)

GASTRIC, GASTRO DUODENAL or PEPTIC ULCER.

Treatment.

Must be thoroughly explained to the dresser on duty or the

patient's attendant. It is better to translate the routine part of the treatment and have it hung up at the patient's bed head.

FIRST STAGE—When active pain is present.

1. Bed—Keep the patient confined to bed.
2. Feed—Every hour. Quantity not exceeding more than 2-4 ounces at a time.

   Foods—Try to vary it as much as possible to relieve the monotony, for example—

   Citrated milk (Sodi Citras gr. 2 to an ounce of milk).
   Next feed—Egg (well beaten with some milk).
   Next feed—Light tea with milk.
   Next feed—Vegetable soup (well strained).
   Next feed—Glaxovo or citrated milk
   and go on in rotation in this order.

3. Drugs.

   (*a*) Tinct. Belladonna, 5-7 minims on waking, every morning.

   (*b*) One small teaspoonful of the following powder after every alternate feed,

   Magnesium Carb. Pond.—1 part.
   Magnesium Carb. Lev.—2 parts.
   Creta Preparata —3 parts.

4. No smoking.

MAGNESIUM TRISILICATE—Adsorbs hydrochloric acid without acting as an alkali. It can therefore be given in large doses without producing alkalosis.

Disodium phosphate—Is a weaker alkali and relieves the pain of the ulcer. A mixture of sodium biphosphate 86 parts, and sodium bisulphate 16 parts, is claimed to be the best harmless buffer for gastric disorders and is sold as Optacid ; dose 1 Gm. at breakfast and 2 Gm at dinner at the two main meals of the day in hyperacidity ; and a few minutes before meals in hypoacidity.

Treatment of Hæmatemesis.

A liberal diet and treatment by alkalies are advocated. Vegetable puree, meat balls, omlette, fish balls, mashed potatoes. Vegetable soups, rice and tapioca puddings.

Blood transfusions should be given if necessary.

Histidine—Treatment of gastric ulcer. Daily injection intra-

muscularly for 3 weeks of 5 cc. of a 4% solution. Results are not satisfactory.

5. If the patient is constipated, increase the proportion of magnesium carb and cut down creta preparata.

   If there is looseness of bowels or diarrhœa, cut down magnesium carb. and increase the creta preparata.

In this way ensure regular and normal action of the bowels.

6. If pain is still severe and there is no reason to suspect perforation, opium as for example Tinct. Chloroform et Morphine co. m. 7, in half an ounce of water may be given every six hours. This must be done with the order of the Medical Officer and under his *strict supervision.*

SECOND STAGE—When pain has practically disappeared.

Time.	Treatment.
7 A. M.	Tinct. Belladonna, 5-7 m.
8 A. M.	One, half boiled or poached egg. Two pieces of toast or biscuit with honey and butter. One cup of milk.
9 A. M.	Alkaline powder (Mag.carb.Pond.and Lev. Creta preparata as above)
10 A. M.	Horlick's milk or ovaltine with a little cream if possible—One cup.
11 A. M.	Alkaline powder.
12 A. M.	Strained vegetable or pea soup—8 oz. Two pieces of toast or half a pau of fresh "Muri" (Murmur, murunda) or vegetable puree. Milk pudding or sweet *Dāhi* or junket, or thin "*Firni*".
2 P. M.	Alkaline powder.
4 P. M.	Milk with tea and little sugar. One piece of thin arrowroot or baker's biscuit with butter.
5 P. M.	Alkaline powder.

7 P. M. Two eggs, scrambled or half boiled.

Two pieces of bread or biscuit with butter or half a pau of "khoi" (Fullia) with milk and sugar or rice boiled thoroughly with milk and sugar, or boiled potatoes.

8-30 P. M. Alkaline powder.

POST ULCER REGIME.

Instructions for the Patient.

Avoid alcoholic drinks except very small quantities with meals, if previously used to it.

Avoid all pips and skins of fruits.

Avoid vinegar, lemon juice, sour fruits, spinach (palak), fried fish, pepper, mustard, hot curries, chutnies, tough meat, sour dahi, and all highly spiced foods.

Take plenty of butter and cream.

Eat slowly and chew thoroughly.

Smoke the minimum amount possible.

GLAUCOMA.

Medical Treatment.

Usually the condition will sooner or later require surgical intervention, but there are certain conditions in which it is advisable to postpone surgery and in some it may be avoided altogether. In chronic glaucoma the chief reason for this is extreme age or infirmity of the patient ; in acute glaucoma, lowering of tension as a preliminary to operation reduces the risks of serious complications, gives time for the operation to be undertaken under the best circumstances and makes the surgeon's work easier and result more satisfactory.

ACUTE GLAUCOMA.

If it has existed for sometime, operation should not be delayed for more than a few hours, required for the preparation of the patient.

1% Eserine drops at intervals of a minute and later repeated at half hourly intervals.

Morphine will relieve pain and help miosis.
Saline purge will relieve intraocular tension.

Not more than a few hours should be lost in such preparation.

Failing above, the tension can be more efficiently reduced by retrobulbar injection of 4 m. of adrenalin hydrochloride (1 in 1000) with 1·5 cc. of 4% novocaine. It not only reduces the tension but produces very good anæsthesia.

If the case is seen in the first 24 hours there will be more hope of reducing the tension by medical measures. In addition to the above, intravenous injection of hypertonic saline may be used.

30 to 50 cc. of 30% solution or 100 to 150 cc. of 10% sodium chloride solution is used. The injection must be given very slowly and carefully. The use of 50% glucose solution is more convenient as it does not cause sloughing if injected outside the vein. 100 to 250 cc. of 50% glucose solution should be used.

The following little operation has been found very successful in aborting an acute attack—Simple paracentesis by a small limbar puncture. This may be done with a cataract knife after cocainising the eye.

CHRONIC SIMPLE GLAUCOMA.

1% pilocarpine or 0.25% eserine is usually efficacious.

Dietetic Treatment.

A diet designed to leave acid ash (see subacute nephritis) will reduce intraocular tension. So Sodium Chloride should be eliminated from the diet and substituted by potassium chloride.

In some cases Ammonium Chloride may be given 6 Gm. a day. This is designed to lesson alkalosis as this reduces intraocular tension. (Extreme example of this is seen in diabetic acidosis where tension of the eye-ball is much reduced).

If miotics and general measures described above fail to control tension and field of vision, operation is indicated. Under special conditions demanding delay, the following may be undertaken. The most important agent at our disposal in such cases is adrenalin and its derivatives, either administered as adrenal packs on cotton wool in the upper fornix

or as amino-glaucosan. Adrenalin is contraindicated in secondary glaucoma and whenever inflammation is present.

SECONDARY GLAUCOMA.

Treat the cause.

In iritis with secondary rise of tension—Do not use miotics. Do a paracentesis and repeat it after several days if necessary.

Large doses of sodium salicylate by the mouth.

Adrenaline is dangerous in these cases.

A more useful drug is ergotamine or gynergen. It decreases the permeability of the capillaries and in this way affects the intraocular tension. Half an ampoule is given subcutaneously, twice a day. Tablets 1/60 gr. or 1/30 gr. may be given by the mouth, 2-3 times a day.

Glaucoma, following cataract operation or discission, adrenalin may prove of great value.

GRANULOMA INGUINALE.

It is a chronic infective ulcerative process usually involving the genitalia and showing very little tendency towards healing.

The disease is most probably not venereal.

Incubation period, about 18 days.

It starts as a small moist papule which rapidly ulcerates. The initial papular lesion ulcerates, heals and breaks down again and then spreads slowly as a serpiginous and very superficial ulcer without suppuration and purulent discharge, but with a nearly dry surface exuding a thin watery fluid containing the diagnostic Donovan bodies.

Treatment—Intravenous injection of tartar emetic remains the most effective treatment, specially in the early stages.

Rajan advocates the intramuscular injection of Fouadin from 1·5 cc. doses increased daily and up to 4·5 to 5 cc. with a total of 40 cc. or more.

HÆMOPHILIA.

TREATMENT.

During the acute phase of the attack, the therapeutic measure per excellence is transfusion of blood, whole or citrated. If transfusion is not feasible due to technical difficulties or absence of suitable donor, intramuscular injection of 30-50 cc. of whole blood is of value. For intramuscular injection, testing of blood is not necessary so long as there is no possibility of syphilis.

The improvement from blood transfusion lasts from 2-6 days depending on the amount af blood transfused.

In the meantime try to obtain Russel's viper venom.

For the control of local bleeding, pressure is helpful.

Tannic acid solution may also be used.

No hæmatoma, no matter how large, or a joint, however swollen, should ever be opened.

Local application of Russel's Viper Venom—This is very useful indeed. When the acute stage has been ameliorated by blood transfusion, if the bleeding continues or recurs, it should be applied.

Russel's Viper Venom is sold in the market as Stypven (B. W.) and is supplied in 1 cc. or 5 cc. rubber stoppered bottle. Accompanying each bottle is an ampoule of solvent consisting of sterile distilled water with 0.5% phenol. A solution of the necessary concentration is prepared by adding the solvent to the Stypven in the rubber stoppered bottle and then applied to the bleeding spot.

HÆMORRHAGE.

A. After Dental Extraction.

When the usual methods have failed,

1. Suture the gum margins, after novocaine anæsthesia, by a mattress suture with catgut using a curved needle.
2. Cork Stopper.

   A cork is cut like a wedge which fits the socket tightly. A piece of gauze soaked in Hydrogen Peroxide is laid across the socket and the cork is pushed home. The patient is asked to close his jaws tightly and a four-tailed bandage is applied.

B. Uncontrollable oozing from the cut surface of a bone (specially marrow) or from a vein that cannot be secured by pressure forceps.

Cut a little bit of fascia about $\frac{3}{4}$-1″ square and keep it pressed on the bleeding surface for about 5 minutes (until is sticks to the surface). At the end of this time the piece of fascia adheres to the surface and bleeding is stopped.

If bleeding is taking place from a vein or artery in a bony canal—Plug the opening (of the canal) wlth a conical shaped piece of bone or with a piece of sterilised match stick.

Apply Russel's Viper Venom (Stypven) if available.

HÆMORRHAGIC DIATHESIS.

Œstrogenic hormones *e. g.*, Theelin have been tried by the mouth and subcutaneously with indifferent results.

HÆMORRHAGIC DISEASES OF THE NEW BORN.

Hæmatemesis and Melæna Neonatorum.

In serious cases, generally hæmatemesis appears first, and is followed by melæna.

Prognosis—Serious. 50 per cent of the children die if not treated properly.

Treatment.

Stop all food by the mouth. Only water to drink.

Calcium lactate gr. 3 or calcium chloride gr. 5 three times a day.

Inject 20 cc. of whole blood from the mother into the gluteal region and repeat in 12 to 24 hours. This is the only real means of cure and is successful in 90% cases.

Subcutaneous saline if necessary.

HÆMORRHOIDS—See Piles.

HAND, INFECTIONS OF.

This is an everyday occurrence and one must have accurate and definite knowledge of treating them. Any practitioner who assumes the responsibility of treating these cases must realise that on his knowledge and skill depend the earning power and

livelihood of the patient (as most of the people belong to the labouring class and an improper conception is akin to criminal negligence. If treated early and efficiently, no infected hand should lose its function. Although it is fortunately rare, I know of one case where as a result of an incision ¼″ longer than what should have been, the patient could not be saved even after amputation at the shoulder joint.

I do not intend to describe the anatomy of the whole hand. I am however giving a description of the important points in surgical anatomy which is essential to follow the facts described. It must be realised that the compartments though distinctly separate, in a neglected or delayed case, one can burst into and infect the neighbouring one or ones.

Surgical Anatomy.

LYMPHATICS.

1. Lymphatics of the hand persue the shortest course to the back of the hand. So an infected wound on the palmer surface soon produces oedema of the dorsum. Pus on the dorsum of the hand is very rare.
2. (*a*) Lymphatics of the little finger, ring finger and ulnar side of the hand pass through the ulnar side of the forearm to the glands at the elbow (cubital) and thence to the glands at the axilla and neck.

   (*b*) Lymphatics of thumb and index finger pass directly to the axillary glands.

   (*c*) Lymphatics of the middle finger. In 15% they pass through the cubital to the axillary and then to the cervical glands.

Therefore infection of the middle and index finger and thumb is more serious.

FASCIAL SPACES.

There are seven fascial compartments in the hand. They are separate and distinct from the tendon sheaths. Three of them (pulp, thenar space and middle palmer space) are important from the point of pus collection. Through the lumbrical spaces pus from the tendon sheaths in the finger may pass to the thenar or middle palmer space and so one must know what these are.

1. Pulp Space (Tip of Finger)—From the tip of the finger in front to ¼″ distal to the last interphalangeal crease. The diaphysis (distal ⅘ of the bone) of the phalanx lies in this space.

So in infection of this space, the hyperæmia and exudation cause compression and impediment of blood supply and the diaphysis usually undergoes necrosis. Fig. 1.

2. THENAR SPACE —On the radial half of the palm. Fig. 3. Boundaries.

In front—Palmer fascia. It is thin and elastic at this place.

Behind—Adductor Transverus Pollicis and the fascia covering it.

Medially (ulnar side)—Strong fascia attached to the third metacarpal bone (which separates the thenar space from the middle palmer space).

3. MIDDLE PALMER SPACE. Fig 3.

Boundaries

Palmer aspect (front)—Fascia deep to the Flexor tendons of the fingers and their lumbricals.

Dorsal aspect (behind)—Fibrous tissue on the volar surface of the interosseous muscles.

Radial side—Fascia attached to the middle metacarpal (which separates it from the thenar space).

It has *three diverticula*, the lumbrical canals through which the lumbricals for the middle, ring and little fingers pass.

It is overlapped on the ulnar side by the ulnar bursa (or the common palmer sheath . Therefore infections of this space *must not* be incised directly from the palm.

4. DORSAL SUBCUTANEOUS SPACE.

On the dorsum of the hand. Space deep to the skin and superficial to the extensor tendons.

5. DORSAL SUBAPONEUROTIC SPACE.

On the back of the hand. Space deep to the extensor tendons.

N. B. REMEMBER that pus on the dorsum of the hand is very rare. The loose tissues become readily swollen in infections of the palm.

If the swollen back of the hand pits on pressure, there is no pus.

If it is swollen and indurated, incision is indicated.

In infections of the dorsal subcutaneous space, don't go too deep, otherwise the dorsal subaponeurotic space will be infected.

6. LUMBRICAL SPACES.

The lumbrical muscles arise from the tendons of the Flexor Digitorum Profundus and their tendons pass through the radial side of the corresponding digit and are inserted into the tendons of the Extensor Digitorum Communis. The canals through which they pass convey pus to the dorsal side of the web of the fingers. They are drained by splitting the interdigital web.

7. HYPOTHENAR SPACE.

It is on the ulnar side of the middle palmer space and of very little surgical importance.

TENDON SAEATHS. (Sheaths of Flexor tendons).

1. Tendon sheaths for the index, middle and ring fingers extend from the distal interphalangeal joints to the distal flexor crease of the plam.
2. Sheath for the little finger extends from the distal interphalangeal joint into the palm, where it practically always joins the ulnar bursa (Common palmer sheath).
3. Sheath of the Flexor Pollicis Longus extends from the interphalangeal joint of the thumb to a point two thumb's breadth above the annular ligament (of wrist). Its enlarged proximal portion is called radial bursa.

Extension of Pus.

Pus from the lumbrical spaces of the middle, ring and little fingers pass into the *middle palmer space*, and *vice versa.*

Pus from the lumbrical space of the ulnar side of the index finger may pass into the middle palmer space.

Pus from the middle and ring finger tendon sheaths pass to the middle palmer space.

In suppuration of the index tendon sheath, the pus bursts first into the lumbrical space or spaces on either side of the index finger. From there it may extend into the *thenar space.*

Pus from the thenar space may extend to the index lumbrical space or to the dorsum of the web between the index finger and thumb.

Pus from the little finger tendon sheath passes into the ulnar bursa and then it may burst into the middle palmer space.

Pus from the tendon sheath of the thumb passes into the radial bursa and due to the communication between it and the ulnar bursa, infects the latter. It may secondarily burst into the thenar space.

Pus *does not* pass between the metacarpal bones to the dorsum of the hand unless there is osteomyelitis of the metacarpal bone.

If the ulnar or radial bursa bursts proximal to (above) the annular ligament, pus spreads in the large fascial space in the forearm deep to the flexor tendon and superficial to Pronator Quadratus. This space is limited by firmly attached fascia at the sides. The pus therefore extends into the forearm along the median nerve and ulnar artery and points at the ulnar side of the proximal part of the forearm.

Diagnosis and Treatment of infections of fascial spaces.

THENAR SPACE.

Balooning of the thenar space.

Thumb and the first metacarpal is pushed away from the rest of the hand.

The distal phalanx of the thumb may be considerably flexed but it does not give any resistance to passive extension, which is well marked in suppurative tenosynovitis of the tendon of Flexor Pollicis Longus.

Treatment.

Incision on the *dorsum* of the hand. (Fig. 4). P. 79.

Cut down on the radial side of the second metacarpal. Pass an artery forceps through the incision across the palmer aspect of the bone when the thenar space will be entered.

Do not thrust the hæmostat further than the radial side of the third metacarpal, otherwise the middle palmer space will be infected.

MIDDLE-PALMER SPACE.

Hand enormously swollen; likened to that of a whale's flapper.

Obliteration of palmer concavity, with slight bulging. No point of maximum tenderness.

TREATMENT.

Direct attack is absolutely forbidden.

Drainage is effected *via* a lumbrical canal.

Open the web between the middle and ring fingers or ring and little fingers. If there is a choice, former is better.

The incision begins on the dorsum and passes over the web into the palm but *must not* extend beyond the distal flexor crease of the hand.

Press over the middle palmer space. If pus wells up, a grooved director is inserted along the lumbrical canal.

The incision is extended until the web is split completely, almost up to the distal flexor crease. Push a hæmostat under the flexor tendon and open it widely. No drainage tube is necessary.

COMBINED MIDDLE PALMER AND THENAR SPACE INFECTION.

Treatment.

Open the middle palmer space as described above.

Push the hæmostat across the middle metacarpal (under the flexor tendcns). The beak of the hæmostat passes superficial to the Adductor Transversus and is made to appear in the dorsum between the metacarpals of the thumb and index finger. Make a counter incision here and draw through a piece of rubber so that the ends project through both the incisions. Remove the drainage after 24 hours.

PULP SPACE.

Treatment.

Hot fomentations and baths in the early stages.

When the pulp is *indurated,* it is time for opening. *Do not* wait for fluctuation to appear.

Make a horse-shoe shaped incision at the sides and tip of the finger. (Fig. 2). P. 79. The incision *must not* reach nearer than half an inch of the terminal flexor crease of the finger. Open it well and no drainage is necessary.

In late cases the diaphysis of the terminal phalanx is already dead and separated and may come out.

DORSAL SUBAPONEUROTIC SPACE.

Pus is very rare in the dorsum.

Pitting on pressure is caused by œdema. Presence of induration indicates pus.

Treatment.—Incisions in the dorsum in the intermetacarpal spaces. Usually two will suffice.

LUMBRICAL SPACES.

Treatment—Split the interdigital web.

Suppurative Tenosynovitis.

GENERAL REMARKS.

Involvement of the tendon sheath is indicated by the patient being unable to flex the finger and the pain is increased on attempting to do so.

It is a serious condition. Delay in treatment may result in sacrifice of the finger, hand or may be life.

It is advisable not to make the incision in the middle line but on one or both sides of it. This will lessen the tendency of the tendon to prolapse. The first incision is given over the proximal phalanx.

In severe streptococcal infections, no pus may be found, but only slight clear exudation. If a clinical diagnosis of tendon sheath infection has been made, it is essential to continue. Make a second incision over the second phalanx and if there is too much œdema, join the two incisions.

If frank pus is present, examine the tendon. If it has a dull yellow appearance, it is certain to slough, and much time and post operative treatment can be saved by excising it.

INDEX FINGER.

Treatment.

Open on the radial side, unless it is evident that the lumbrical canal between the index and middle fingers is involved, when the ulnar side should be chosen.

If pus oozes out on pressure over the lumbrical canal between the index and middle fingers, split the web as far as the distal palmer flexion crease.

If the radial side is opened, press over the thenar space, and if pus comes out, the thenar space should also be drained (as described above).

Although very rare, remember that the middle palmer space may be infected from the flexor tendon sheath of the index finger.

MIDDLE FINGER.

Treatment.

Decide which side is more tender and incise on that side.

In doubtful cases, choose the ulnar side.

If the ulnar side has been chosen and pus can be squeezed out of the lumbrical canal, extend the incision just short of the distal palmer crease.

In early cases middle palmer space is not involved; the pus lies *between* the flexor tendons and the palmer fascia, and a palmer extension of the original incision is all that is required.

If (at the clinical examination) it is found that the middle palmer space is infected, drain that space as detailed above.

RING FINGER.

Remarks in connection with the middle finger apply to the ring finger as well, except when in doubt as to which side to open the sheath, choose the radial side.

LITTLE FINGER AND ULNAR BURSA.

Special Clinical features of ulnar bursitis.

Much œdema of the back of hand.
Fullness of the palm, but the concavity is still present.
Swelling is usually well marked above the anterior annular ligament.

Kanavel's sign is present—A point of maximum tenderness between the middle and distal palmer crease in a line with the ulnar side of the ring finger. Fig. 7. P. 80.

If not drained early, the radial bursa is also involved. If the thumb is fixed and tender, this is more or less certain.

Treatment.

Incision on the ulnar side of the sheath, over the two proximal phalanges.

When the tendon sheath is occluded from the ulnar bursa, a fortunate but rare event, as shown by the limitation of tenderness to the sheath of little finger tendon, the incision must be confined to the finger strictly.

Ulnar Bursa Infection.

After the above mentioned incision, press over the palmer portion of the bursa, and if pus comes out, make an incision from the distal flexion crease of the hand towards the base of the palm along the centre of the hypothenar eminence. Fat will bulge in the wound, dissect it away. Pass a director into the bursa from the sheath above and lay open the bursa cutting as near to the ulnar side as possible. Fig. 7. P. 80.

When the anterior annular ligament is reached, press over the prolongation of the bursa in the forearm. If pus comes out, cut the anterior annular ligament and drain the forearm as well (see below).

If the infection has been present for more than 48 hours, and there is flexion and rigidity of the thumb, open the radial bursa as well.

THUMB AND RADIAL BURSA.

Radial bursa is the extension of the sheath of Flexor Pollicis Longus.

Clinical Features.

Distal phalanx of thumb is flexed, with rigidity and tenderness over the sheath.

Maximal swelling just distal to the anterior annular ligament.

Note. In early secondary involvement of the ulnar bursa from the radial, there will be no gross swelling of the palm.

Treatment.

Incise slightly to the radial side of the front of proximal phalanx and dissect down up to the tendon. Follow the sheath through the thenar eminence to within a thumb's breadth of the anterior annular ligament but no further (risk of injuring the motor nerves to the thenar muscles).

Drainage of the radial bursa is carried out in the same way as the unlar (on the radial side).

EXTENSION OF THE INFECTION FROM HAND TO FOREARM.

As already stated, in rupture of ulnar or radial bursa pus spreads into the forearm between the Flexor Digitorum Profundus on one side and the Pronator Quadratus and the interosseous membrane on the other.

Drainage.

Find out the styloid process of ulna.

Commence incision ½″ above this (on the flexor surface), down to the bone and about 2″ long.

Push a hæmostat in and open the space.

If the radial bursa is also infected—Make a counter incision on the radial side.

Push a finger in the wound, open out the space and complete the rupture of the bursæ.

No drainage tube is required.

Paronychia (Infection of nail bed).

It is not a grave condition and the most serious complication that may occur is necrosis of the terminal phalanx.

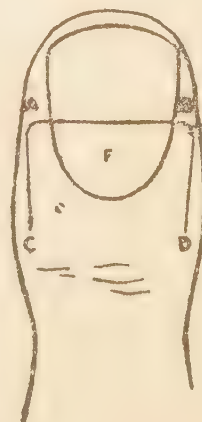
Treatment.

Early operation.
Lateral incision on the side of the nail bed.
Avoid cutting the nail bed.
In early cases unilateral incision is sufficient.

Late cases—Lateral incision on either side.
Dissect up the flap of the skin.
With a pair of scissors cut the nail joining the two incisions and remove the bit of the nail included between the two incisions.



Unilateral incision.



Bilateral incision in onychia. Incisions AC and BD or either side. Join AB cutting the nail with scissors. Remove the part of the nail F.

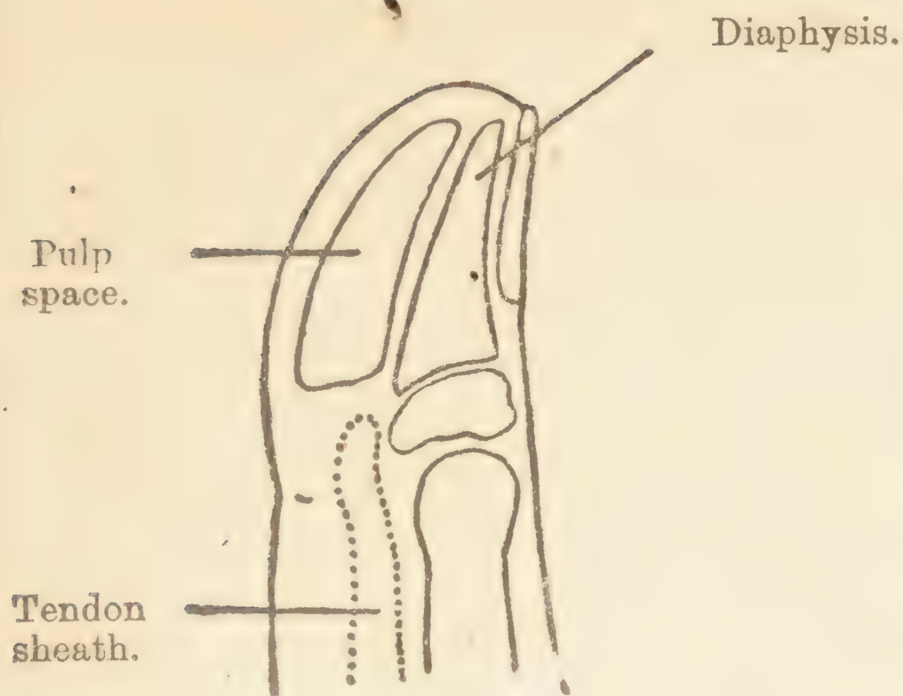


Fig. 1
Finger.

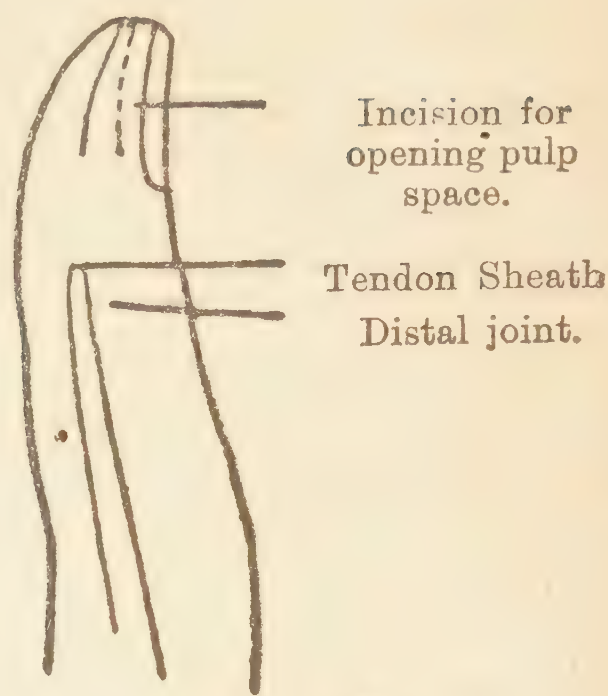


Fig. 2
Finger.

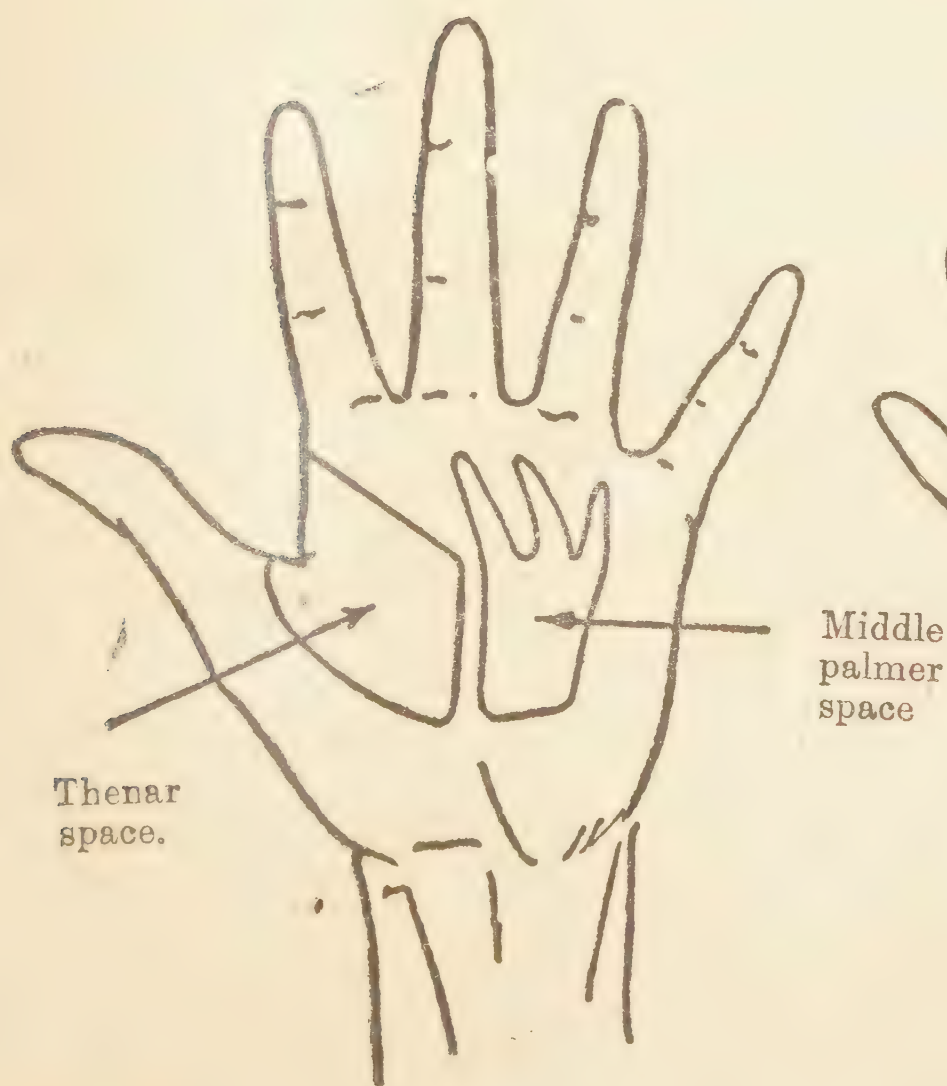


Fig. 3.
Palm left hand.

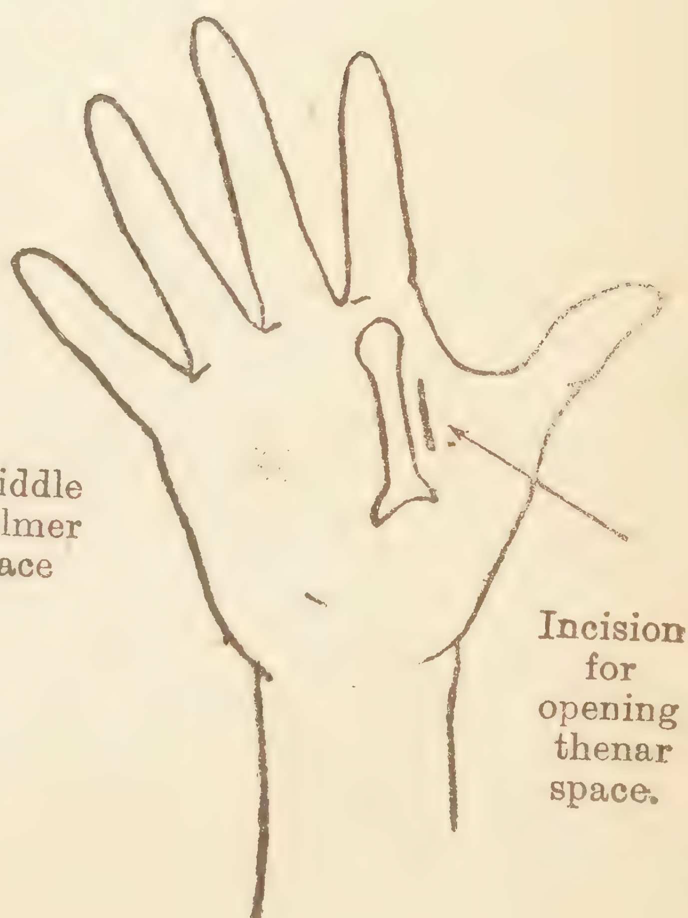


Fig. 4.
Dorsum left hand.

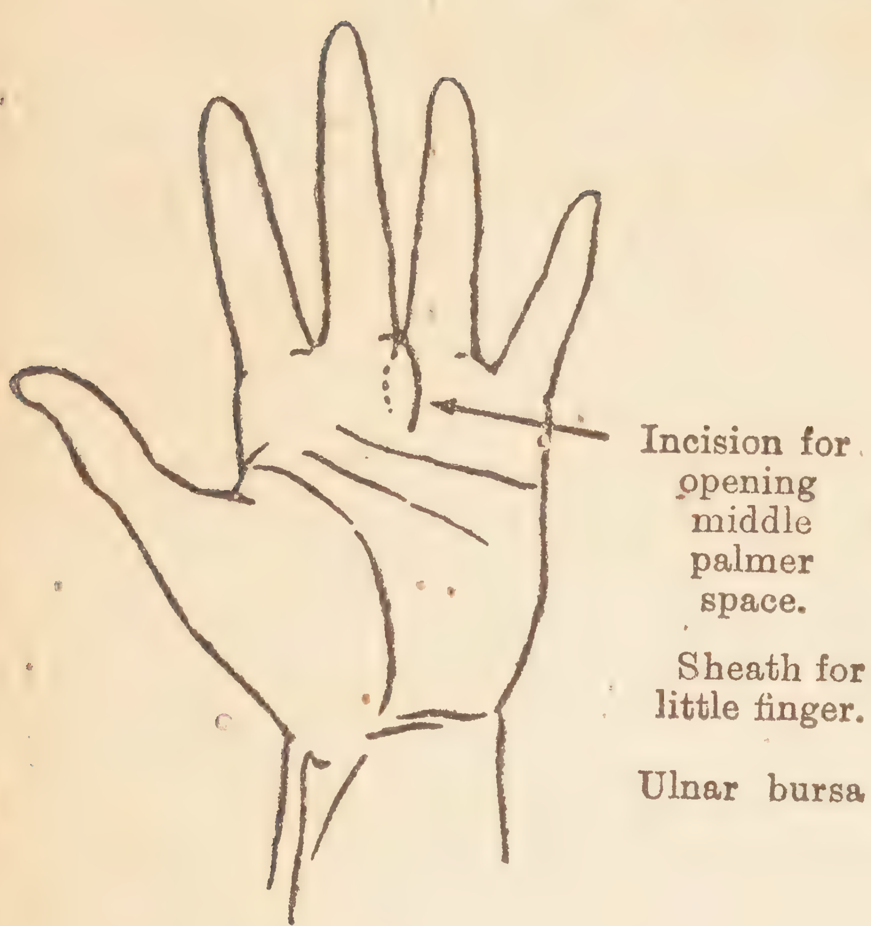


Fig. 5.
Palm left.

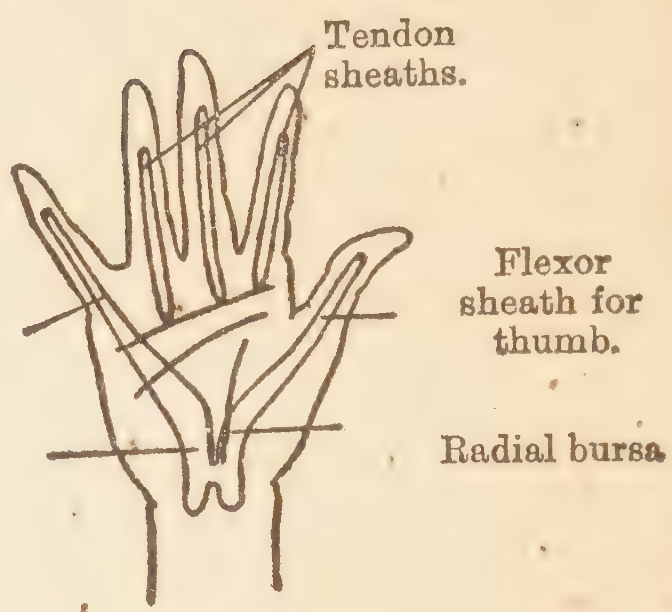


Fig. 6
Palm right.

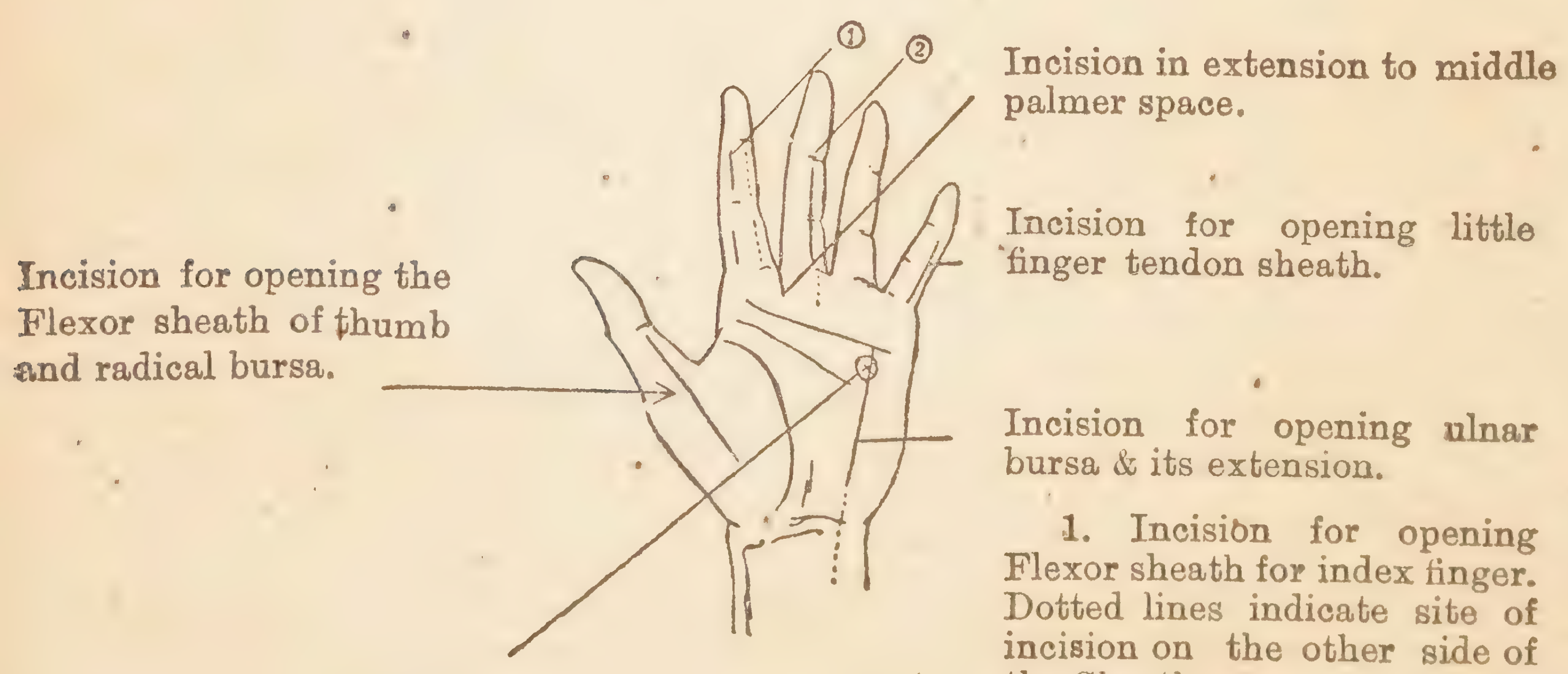


Fig. 7
Palm left.

1. Incision for opening Flexor sheath for index finger. Dotted lines indicate site of incision on the other side of the Sheath.

2. Incision for opening flexor sheath for middle finger. Dotted line indicates extension of incision into palm where the middle palmer space is infected.

HEAD INJURIES, Management of

History.

First obtain the history. Nature of the fall or violence, and sequence of events immediately subsequent to the injury. Whether there was temporary disturbance of a slight concussion, a brief loss of consciousness followed by rapid return to consciousness ; or there may be deep unconsciousness of a severe concussion ; or yet again the consciousness is retained for sometime after the accident, but presently there is a lapse and then a state of stupor develops. The third denotes cerebral compression.

Shock and other injuries.

Preliminary examination should attempt to answer three questions.

1. Is shock present, and if so to what degree ?
2. Are other injuries present apart from the damage to the skull and contents ?
3. What type or types of head injury exist ?

Shock is an inevitable accompaniment of concussion and actually there is no clear line of distinction between the two. For the moment, the occurrence of shock is not without advantage for due to the associated lowering of intracranial pressure, through reduction of general blood pressure it affords temporary safeguard against bleeding immediately after the accident. So although the shock should be treated, none of the intensive stimulating methods should be employed.

Possible Head Injuries.

1. Simple scalp wound.
2. Fracture of the skull vault.
3. Fracture of the skull base.
4. Concussion.
5. Cerebral compression.
6. Cerebral laceration.

Investigation.

When the patient is unconscious, begin investigation by estimating the *depth of unconsciousness.* This is a reliable index of the degree of intracranial damage and provides a standard by which we can contrast further improvement or deterioration. Four tests are applied in the following order.

1. A simple question such as "What is your name ?" spoken in the ordinary tone of voice.

2. An imperative question spoken loudly close to the ear, as raise your right hand or left foot.
3. Induction of a painful stimulus by pressing the finger nail against the supra-orbital notch.
4. Testing the corneal reflex.

Response to the first indicates a comparatively slight concussion, while failure to react to the last shows the deepest degree of unconsciousness compatible with life.

Pulse, Respiration, Temperature and Blood pressure.

These should be recorded at two hourly intervals in the first 24 hours and then at 4 hourly intervals.

Pulse—Quick pulse of small volume is the usual accompaniment of concussion, but in the absence of complications, it soon returns to normal.

A slowing pulse rate accompanied by increased volume is a hint that compression is developing.

A quick pulse rate maintained at high speed and yet showing iucreased volume is an indication that some degree of cerebral irritation without localised compression exists.

Respiration—Changes in respiration are less constant but they too are important.

In concussion respiration is slow and shallow. Irregularity of respiration and particularly Cheyne-stokes breathing indicates increased intracranial pressure.

A much quickened respiration points to serious cerebral laceration, generally of a diffuse character.

In advanced cerebral compression there is irregular stertorous breathing which indicates increasing bulbar compression and failure of the vital nuclei in the medulla.

TEMPERATURE—Assuming that extra cerebral causes have been excluded, a rising temperature means that there is some degree of cerebral damage.

Uncomplicated concussion does not exhibit pyrexia.

Few individual features are more suggestive than pyrexia, and in general it may be said that earlier the manifestation and the more intense the pyrexia, the more serious the cerebral damage.

Blood Pressure—Must be recorded at two hourly intervals for 24 hours.

Immediately after head injury, the blood pressure falls and as recovery advances, it rises. If it does so gradually, and after rising a few points above normal readjusts itself to average figure, prognosis is good.

If after preliminary fall it rises to a high level and is maintained, it indicates increased intracranian pressure.

On the other hand in very severe injuries, as associated with extensive fractures of the skull, blood pressure may remain low for the entire period of illness.

Pupil—As a general rule the pupils are moderately contracted and react sluggishly to light.

If one pupil is widely dilated and fails to react to light, the other presenting a normal appearance and retaining the light reaction, and if the change is noted comparitively suddenly in the progress of the case, one or other of two explanations is likely—a pontine œdema or hæmorrhage which is interfering with the activity of the third nucleus, or a cerebral compression developing on the same side as the dilated pupil. The latter is of significance in the recognition of compression syndrome.

Examination of the local part—Wound in the scalp, bleeding from nose or ear, any depression in the skull. If blood is escaping from the ear its character is noted. If the consistency is more watery than normal, and if coagulation is delayed, the probability is that cerebrospinal fluid is mixed with it.

Examination of the extremities—Any evidence of twitching is noted and the limb is moved in various positions in order to ascertain whether there is any flaccidity or spasticity.

The tendon, planter and abdominal reflexes are examined but their evidences are not particularly trustworthy in head injury.

Concussion.

Clinical appearances resemble that of surgical shock with the addition of a disturbance of consciousness in varying degree. He may be unconscious of the first or second degree, pulse quick, reduced volume, respiration quick and shallow, blood pressure reduced, temperature subnormal, musculature flaccid, appreciation of pain is diminished, skin pale, surface temperature is lowered.

Compression.

May be caused by a piece of bone that has been driven in, hæmorrhage, œdema or congestion.

Early Symptoms and Signs—Early recognition is essential if good results are to be secured.

If there has been a period of consciousness between the period of concussion and the onset of compression certain symptoms may be recorded. A severe insistent headache, intolerance to bright light, restlessness and excitement and may become irritable. These are important symptoms for guidance and further treatment. Ultimately the patient relapses into unconsciousness and the insensibility deepened and the general and local signs of compression become evident.

Danger arises when the stupor of concussion passes almost imperceptibly into unconsciousness of compression, and the latter state develops so gradually that its recognition is overlooked until the opportunity of affording relief is almost past. In these cases the unconciousness deepens, the face becomes flushed, there is restlessness, particularly when any stimulation is applied to the body surface, pulse rate falls, its volume increases and blood pressure readings are considerably increased, temperature rises, pupils are equal and contracted and there is retention of urine. If there is focal compression, cortical anæmia develops and the musculature of the opposite arm and leg and side of the face demonstrates incoordinated contractions, and with further compression a flaccid paralysis is noticed. Lastly, if a unilateral delayed dilatation of the pupil appears, it is an evidence of compression on the same side as the dilatation.

The other sign is increased, intracranial pressure as evidenced by the pressure of the cerebrospinal fluid.

So the evidences of cerebral compression are,

1. The effect of general increased intracranial pressure as evidenced by pulse etc.
2. Effects of local cortical pressure as shown by developing peripheral paralysis.
3. The rate at which cerebrospinal fluid comes out on lumber puncture.

Possible later effects.

1. A delayed compression œdema generally associated with cerebral laceration.
2. A meningo-encephalitis due to infection.

TREATMENT IN A SMALL HOSPITAL.

Undress the patient with minimum disturbance.
Put him to bed with head on one side.

Concussion is tantamount to shock and treat accordingly.

Hot water bottles, fluids preferably by mouth otherwise subcutaneously or rectally. Intravenous methods are inadvisable because a sudden rise of blood pressure may initiate bleeding and may produce cerebral œdema.

Two hourly pulse, temperature, respiration and watch the bladder.

Restlessness.

Quite dark room.

Restlessness may indicate onset of compression.

No morphine.

Give chloral and bromides. 15-20 gr. of each. If unable to swallow paraldehyde per rectumm, one dram per stone of body weight, made up with mucilage of acacia in a proportion of two parts to one of the mucilage. If this is not effective hyoscine should be given.

Fractures involving vault.

Simple fissured fracture—Leave it alone.

Compound fissured fracture—Clean it and treat the general condition. Keep an watch for symptoms of compression.

Depressed fracture—If it is pressing on the brain, it must be operated and the pressure relieved. Otherwise leave it alone.

Fracture of the base.

Anterior fossa—No immediate danger, but liable to delayed sepsis owing to communication with nasal cavity.

Middle fossa—The dangers are both immediate and remote. Immediate because an extensive hæmorrhage often accompanies the fracture and because the line of it may involve the sella turcica and endanger the pituitary or its stalk.

Remote because a communication with the ear may induce sepsis.

Posterior fossa—Fracture of this gives the most immediate concern because of their proximity to the vital area of the medulla, but, on the other hand they are in a large measure free from the risks of secondary infection.

The gravity of the fractures of base in contrast to those of the vault is mainly due to the relation of the dura to the bone. At the base the dura is closely adherent to the bone, so in fractures the dura is invariably torn. In the vault, dura separates with greatest ease.

Treatment of fractures of the base.

Same line of treatment as already described.

Avoid any obvious sepsis—Few drops of 5% argyrol into the auditory meatus and if possible spray the nose with the same solution.

Restlessness is usual and should be treated at an early stage with judicious sedatives.

Treatment of compression.

24 hours having passed, deepening unconsciousness, alterations in the pulse, blood pressure, respiration and a rising temperature may indicate the onset of a generalised and progressive cerebral oedema.

Lumber puncture is done.

If there is moderate rise of pressure, the fluid should be drained until normal pressue is attained.

If there is excessive rise of pressure—Hypertonic therapy. If the patient is able to swallow, give 2 dr. of mag. sulph. in 2 oz. of water and thereafter at intervals of 2 hours 1 dr. of the salt in 2 oz. of water until a watery stool is evacuated.

If swallowing is impossible 3 oz. of mag. sulph. in 6 oz. of water is given as an enema.

Hypertonic solutions as 50% glucose or 30% sodium chloride injected intravenously are powerful dehydrating agents. They may be employed if there is no evidence of bleeding.

If the symptoms reappear treatment should be repeated.

This is all that should be done in a small dispensary. In Tehsil Headquarter Dispensaries further treatment as detailed below may be carried out.

If the compression persists or increases in spite of the above treatment, it is not simple and general cerebral œdema. It is more likely to be hæmorrhage which is slowly but insidiously progressive and we are faced with deciding whether to operate or not. If operation is decided it must be done as soon as possible and it cannot be expected that a local decompression will afford relief to a brain that is completely water-logged.

Technique of operation.

Local anæsthetic, 1% novocaine with adrenaline. The infiltration is carried along a line which extends vertically upwards from the zygoma one inch in front of the external auditory meatus for a distance of 3″ or 4″.

The superficial tissues are divided, temporal fascia is incised and the fibres of the temporal muscle are split and retracted and the bone of the temporal fossa is exposed. The bone is perforated with a trephine or burr at a point about two finger breadths above the zygoma and with a nibbling forceps the vault is cut away until an aperture of 2½″ square is made. If there is a clot, remove it and probably the middle meningeal artery is ruptured, which is ligatured.

Failing this, open the dura in cruciate manner, avoiding the dural vessels. If they have to be divided, pick them up with fine round needle and stitch and ligature each individually.

The dural flaps are widely separated, the split in the temporal muscle is restored by a few interrupted catgut sutures temporal fascia is united with a continuous catgut suture and the skin edges are united with silk worm gut or horse hair.

If there is still signs of further compression, alimentary dehydration should be continued. Failing that a similar decompression operation may be done on the opposite side.

After treatment.

Three to four weeks in bed.
Low diet with abundance of fluid.
Half an ounce of mag sulph. each morning.
10 gr. of potassium bromide daily.

For insomnia, luminal gr. 2, or medinal gr. 7½, or soneryl gr. 5.

HERNIA.

INJECTION TREATMENT—It has become rather popular in America. There are a good number of failures and may need very prolonged treatment.

The injection is made into the cord substance (not in the sac taking care that there is no loop of gut) in the neighbourhood of the internal ring through the external oblique aponeurosis and an accurately fitting truss must be worn throughout the period of treatment night and day. If after injecting 1 m. there is pain it means that the peritoneum has been entered and the needle must be withdrawn. The following solution is recommended.

Lloyd's sp. tinct. calendulæ	25 parts
Alcohol	25 parts
Phenol crystals	50 parts

Six to twelve injections are usually required, at intervals of five days, but the truss is worn from 3 to 6 months.

HOOKWORM or ANKYLOSTOMIASIS.

Treatment.

Oil of chenopodium—m. 10.

Carbon tetrachloride—m. 20.

Saturated Solution of Magnesium Sulphate—2 ozs.

This draught is given in empty stomach in the morning. Follow it by a bowel wash in 3 hours' time if bowels do not open before, and repeat the magnesium sulphate alone if required.

This treatment should be repeated again in 10-15 days, as one course of treatment often fails to remove all parasites.

Carbon tetrachloride has been abandoned by Maplestone in the treatment of this disease.

Tetrachlor-ethylene in 3 cc. doses has proved very satisfactory. It is given mixed with 2 ounces of Mag. Sulph. solution.

Anthelmentics should be given with great care if the hæmoglobin is below 50%. It should first be increased by administration of iron. Iron can correct the anæmia even when the patient is still harbouring the worm. It should always be given in large doses to correct the anæmic condition. Blaud's mass or a mixture of Ferri et Ammon Citras should be used.

HYDROCELE.

INJECTION TREATMENT. After aspiration 2 cc. of quinine urethane solution are injected on the first day, and a week later 3-4 cc. are injected Three weeks are allowed to pass and if the fluid has not by this time been absorbed a third injection is given.

Other preparations for injection—Quinine and urea hydrochlor lactate, 60% solution of glucose, sodium morrhuate.

HYPERPIESIA or Essential Hypertension.

Important Facts.

1. The organs of a patient with hyperpiesia are used to act satisfactorily under the blood pressure and any attempt to its drastic reduction may be harmful.
2. The heart of an hyperpietic is carrying an extra load, and the welfare of the patient depends on the maintenance of a strong myocardium.
3. The strain on the myocardium is increased by obesity.
4. Vigour of the myocardium is impaired by anæmia or toxæmia.

Management.

The first essential is NERVOUS RELAXATION.

1. When there are no other symptoms.

These cases are generally detected, while carrying on a routine examination for some other disease or for life insurance.

In some cases it is better not to tell the patient of the condition but mention it to the wife or a near relative and give the necessary instructions to follow. But as a general rule it is better to tell the patient and assure him that everything will be all right if he takes care of himself.

Advice as to habit and mode of life.

(*a*) Should free himself of all irksome and unnecessary responsibilities.

(*b*) Diet—small in quantity, dry, simple and well cooked.

Green vegetables, fresh fruits, salads, celery, milk and honey.

Meat in strict moderation.

Gravy, soup, hash, highly spiced curries, alcohol, tea, coffee, and excess of tobacco should be avoided.

(c) Assure the patient not to worry but to see the doctor every six months and whenever he feels unwell.

2. Treatment of early symptoms, *e.g.* cardiac pain, dyspnœa indicating early cardiac failure, paræsthesia, paresis, or vertigo.

(a) Rest in bed. Give bromides or chloral if necessary, to diminish restlessness and irritability. Nervous and highly strung people will improve immediately under this treatment.

(b) Ask the patient to prepare a list of his work and activities. Cut down everything which is not of vital importance for his pleasure or in earning his livelihood.

(c) Obesity—Regulate the diet.

A diet representing 1200 calories should be advised and this should gradually be cut down to 1000 calories.

In some patients thyroid extract is worth a trial, but it should be used with greatest care about menopause.

(d) Infection—All foci of infection should be removed.

(e) Myocardial failure.

Progressive liability to dyspnœa and tendency to sudden nocturnal attacks—Ensure restful nights. Theominal gr. 5, or codein gr. 1, before retiring to bed.

It is futile to prescribe drugs of the vasodilator group.

3. General.

Potassium Iodide may be given. If it causes iodism, Tinct. Iodine 5-7 m. in milk may be given daily.

Restless and highly strung persons.

Mixture containing Ammonium Bromide, and if associated with menopausal symptoms, add Tinct. Valerian Ammuniata 60 m.

Bowels.

Pill. Hydrarg. and Pill. Rhei, each gr. 2 at bed-time, followed next morning by Seidlitz powder, once a week.

Anæmia—Hæmatinics.

Venesection—Though of only temporary benefit, it often diminishes the intensity of headaches and mitigates annoying tinnitus, vertigo and mental confusion. It is very useful in acute pulmonary œdema.

HYPNOTICS and their uses.

I. MILD HYPNOTICS.

1. **Analgesics**—They remove pain. Phenacetin, phenazone, amidopyrine etc.
2. **Alcohols**—They are not used for this purpose except in old and debilitated patients.
3. **Bromides**—Sedatives.

   Useful for insomnia of worry, overwork and agitated states of mind.

   Sedobrol and similar proprietary preparations are broths containing sodium bromide in place of sodium chloride.
4. **Urea derivatives**, other than barbiturates

   (*a*) Carbromalum (Adalin) } Bromide and urea com-
   (*b*) Bromural. } pounds.
   (*c*) Sedormid—Does not contain any bromide.

These are mild and light hypnotics, rapid and pleasant in action and leave behind no after effects.

5. **Carbamates.**

   (*a*) Urethane.
   (*b*) Hedonal.

These are rather mild for adults and may not be effective. They are rapid and safe in action and leave no after effects. They can safely be used for children.

II. POWERFUL HYPNOTICS.

1. **Paraldehyde**—It acts quickly and there are no unpleasant after effects. The sleep lasts for several hours and is refreshing.

It has no depressant action on the heart or respiratory system.

It must not be used in cases of acute nephritis and cirrhosis of liver.

The best flavouring agent is liquorice and it is best given in an emulsion form.

2. **Sulphonal Group.**

(*a*) Sulphonal.

(*b*) Trional.

The action of these drugs is uncertain and absorption is slow as well. Excretion is also slow and so cause drowsiness next day.

They are liable to produce liver and kidney damage.

3. **Halogens.**

It is stated that they dpress the heart. They exert no toxic action on the heart in therapeutic doses.

They are of no use in sleeplessness due to pain.
They cause gastric irritation unless well diluted.

(*a*) Chloral hydrate.
Useful for insomnia due to overwork and worry.

It is fairly rapidly absorbed and certain and reliable in action.

(*b*) Chloretone—Useful for sea sickness and as a local anæsthetic.

A good hypnotic having the same properties as chloral with less toxicity and gastric irritation.

(*c*) Chloralamide—Excellent hypnotic.

It is very insoluble and unless given in suitable form, absorption and action may be delayed.
Methods of administration.

i. As a powder (Pulv. Chloralamidi)—Dissolve it in a little whiskey and then add water.

ii. 60 m. of Tinct. Aurantii. with an equal quantity of ordinary syrup to each ounce of water will dissolve 30 gr. of chloralamide with 30 gr. of Potassium bromide as well, which is quite sufficient.

Dissolve the chloralamide in the tincture with gentle heat and then add the other ingredients and the required amount of water.

III. OPIUM.—Pre-eminetly an anodyne and so useful in sleeplessness due to pain.

(*a*) **Nepenthe**—An elegant and useful preparation. It is one-third less strong than the tincture of opium.

(*b*) **Omnopon**
(*c*) **Opiodin**
} Do not cause nausea or constipation.

(*d*) **Spasmalgin**—Contains a derivative of atropin, papaverin and omnopon.

(*e*) **Trivaline**—It is a combination of morphine and cocaine valerianate.

(*f*) **Dilaudid**—It is a new preparation and claimed to have the pain-relieving properties of morphine without any other effect.

IV. BARBITURATES.

1. **Veronal** or baritone—Quick and short action.
2. **Soneryl**—Light hypnotic.
3. **Luminal**—Slow in action but the effect lasts for a long time. Useless as a hypnotic but useful for many other purposes.
4. **Evipan**—Rapid in action and hardly leaves any drowsiness behind.
5. **Evipan Sodium**—The effect is over in about 20 minutes. Only used as a general anæsthetic for operations of very short duration.
6. **Hebaral Sodium**—Light, efficient and reliable hypnotic giving no heaviness the next day.

   It is an excellent preparation for bed-time use.
7. **Nembutal**—For inducing sleep before anæsthesia. It is claimed that hebaral sodium is more useful for this purpose as this does not cause the excitement not uncommonly seen after nembutal.
8. **Dial**—Although light, it is not so mild a drug as is usually supposed.
9. **Amytal Sodium**—Particularly suitable for premedication (for anæsthesia) in children.

It is also used as an instramuscular injection of an aqueous solution of 3 gr. to calm maniacal excitement seen in some cases of exophthalmic goitre.

10. **Calcium Phanodorn**—Joining the barbiturate radicle to a metallic base other than sodium, the toxicity and depressant action is diminished.

Notes on the administration of Barbiturates.

i. Obese, debilitated or those with kidney disease tolerate them badly.

ii. Patients with myocardial disease, arteriosclerosis or very low blood pressure, react badly to the shorter acting drugs.

iii. Never repeat for hypnotic purpose a dose of a barbiturate.

iv. Never combine barbiturates.

v. Never give them before or after an opiate. There is only one exception to this rule—Nepenthe and medinal go together very well.

vi. Better not give as a tablet but give in powder form in a cachet or best of all in a solution form. Substitution or reduction of dose will then be easier without the patient knowing of it.

V. MIXTURE.

Most of the hypnotic drugs in the market, *e. g.* Allanol, Cibangin, Veramon are mixtures of amidopyrine with barbiturates. Recent researches have shown that habitual use of amidopyrine may cause agranulocytosis.

INFANT FEEDING.

Breast feeding is undoubtedly the best method of nourishment for the baby, and artificial feeding should never be resorted to until a very good and satisfactory trial has been given for breast feeding. If there is not enough supply of mother's milk, supplementary artificial feeds should be given and breast feeding must not be stopped. With perseverance nearly all mothers will be able to nurse the child for three months and most up to six months. But occasionally the milk may not be available or owing to extremely bad state of health of the mother it may not be feasible, and then the child has to be artificially fed.

Number of feeds.

The most important factor in infant feeding is that it must be at strictly regular intervals *by the clock.* The feeds for the child of average weight should be every four hours, altogether five feeds in the day, beginning from 6 o'clock in the morning. The child under the average weight, or one with poor digestion should have his feed every three hours, altogether six feeds in the day at 6, 9, 12, 3, 6, 10 o'clock.

Requirements of a baby.

The only scientific method of finding out a baby's requirements is the amount of calories required. For this purpose the only instrument required is a balance to weigh the baby.

CALORIC requirement.

1. Normal baby.

   From birth up to 3 months—50 calories per pound of body weight.

   From 3 to 6 months—45 calories per pound.

   From 6 to 12 months—40 calories per pound.

2. Infants below average weight will require proportionately more, even up to 70 calories per pound. Conversely, fat children above the average weight will need proportionately less.

3. In the hot weather it should be cut down by quarter or even one-third of the above requirements. But remember that the quantity of water must never be cut down and may have to be increased.

FLUID requirement.

For each pound of body weight a normal infant requires 2½ ounces of total fluid in 24 hours.

Calculation of the amount of the food required.

1. Find out the weight of the child in pounds.

2. Multiply the weight in pounds by the number of calories required per pound (from above data). This will give the amount of calories required.

3. From the table given below find out the quantity of the proposed food that will supply the amount of calories required. This will be the total amount of food required in 24 hours.

4. Multiply the weight (of the child) by 2½. This will give the total amount of fluid required, in ounces, in 24 hours.

5. (3) and (4) above give the amount of food and water required for 24 hours. Divide this by the number of feeds in 24 hours (five or six according to whether the child is fed three or four hourly). That will g[illegible] the quantity of food and fluid required for each feed.

To determine the **amount of Food ingested by a breast feed baby.**

Weigh the child immediately before and after the feed. The difference will show the amount of milk ingested. This multiplied by the number of feeds in the day will give the total amount of milk ingested in 24 hours.

Artificial Feeding.

1. GOAT'S MILK.

Next to human milk is goat's milk and if this is available it should be used. Moreover goats being free from tuberculosis, the milk can be given without boiling and thus the vitamins retain their vital properties, if milking is done under clean conditions.

2. COW'S MILK.

Undiluted cow's milk should not be given to infants under three months. For details of feeding see Table *infra.*

3. HUMANISED COW'S MILK.

Next to goat's milk humanised cow's milk is most suitable for village people, as it incurs least expense ; but it needs careful handling.

Preparation.

One pint or a quart of fresh cow's milk is placed in a glass douche can or a similar tall vessel, (preferably surrounded with ice or cold water) in a cool spot for 4 hours. Then the top quarter of the milk is syphoned off. This is diluted with equal quantity of boiled water. Sugar, preferably milk sugar (lactose), at the rate of one ounce to the pint, is then added to the mixture. Later the quantity of sugar (carbohydrate part) has to be increased, about two ounces to the pint. This amount is generally too much for the average child and may upset digestion. So it is better to use some malted cereal as Mellin's Food in place of the extra sugar.

4. TINNED MILKS AND MILK FOODS (DRIED MILKS).

As it is almost impossible to procure good and satisfactory cream, all forms of food that need addition of cream is unsuitable for this country. Therefore the different grades of dried milks are preferable. They are in the market with various amounts of fat content as full cream, half cream, skimmed etc. Routine use of full cream milk is not recommended in the first three

Ave	”	8th and 9th months.	5	8	40	40	-	4	-do-	-do-

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TABLE FOR Feeding WITH COW'S MILK. (Truby King).

Average Weight of Baby.	Age of Baby.	Number of feedings.	Ounces at each feeding.	Total oz. in 24 hours.	Composition of food.		Intervals in hours.	Hours of feedings.
					Ounces Humanised Milk.	Ounces of Boiled water.		
7 lb.	3rd day	6	1	6	1½	4½	3	6,9,12 noon, 3,6,10 P.M.
	4th ,,	6	1½	9	3	6	3	-do- -do-
	5th ,,	6	2	12	5	7	3	-do- -do-
7¼ ,,	7th ,,	6	2½	15	7½	7½	3	-do- -do-
7½ ,,	10th ,,	6	3	18	11	7	3	-do- -do-
	Beginning of 3rd week.	6	3½	21	14	7	3	-do- -do-
	Beginning of 4th week.	6	4	24	18	6	3	-do- -do-
8¾ ,,	Beginning of 2nd month.	6	4¼	25½	21½	4	3	-do- -do-
	Middle of 2nd month.	6	4¼	25½	25½	-	3	-do- -do-
10½ ,,	Beginning of 3rd month.	6	4½	27	27	-	3	-do- -do-
	Middle of 3rd month.	5	5½	27½	27½	-	4	6,10, A.M. 2,6,10 P.M.
12¼ ,,	Beginning of 4th month.	5	6	30	30	-	4	-do- -do-
13¾ ,,	Beginning of 5th month.	5	6½	32½	32½	-	4	-do- -do-
15 ,,	Beginning of 6th month.	5	7	35	35	-	4	-do- -do-
16 ,,	Beginning of 7th month.	5	7½	37½	37½	-	4	-do- -do-
	8th and 9th months.	5	8	40	40	-	4	-do- -do-

Average weight of baby at birth is 7½ lb., but it loses about ½ lb. in first three days.

months as they often cause gastro-intestinal trouble. It is better to start with half cream and then gradually work up to full cream strength. About the fifth month fresh cow's milk may be tried.

When starting a new diet, give it slightly less in quantity than is actually required by the baby and then gradually work up to the required amount. Never cut down the total amount of water required. Condensed and other sweetened milks should be avoided.

Advantages of Dried Milks.

1. More easily digestible.
2. The various constituents and mineral contents are in a proportion that suits the baby's requirements. In these days special preparations are always available which will suit the special requirement of a particular baby.
3. Sterile.
4. Vitamin content is normal.

Full Cream Milk Food (with adequate amount of vitamins and iron).

A complete food for the normal infant.

Preparations—Ostermilk
Cow and Gate Full Cream Milk.
Cow and Gate Export Milk Food.
Allenbury's Foods Nos. 1, 2 and 3.

Half Cream Milk (with normal amount of iron and vitamins)
Suitable for,

1. Nervous and highly strung type of child who suffers from cyclical vomiting or periodical bilious attacks.
2. Who have difficulty in fat digestion.

   Their stools are of pale dry crumbling nature. They have characteristic sweetish odour in their breath due to production of ketone bodies owing to insufficient burning of fats.

Preparations—Buttermilk powder (Glaxo).
Cow and Gate half cream milk food.
Allenbury half cream milk food.
ELEDON acid butter milk (Nestle).

Milk food with very little fat.

Suitable for fat intolerance and coeliac disease.
Preparation—Cow and Gate Separated Milk Food.

ADDITION OF LACTIC ACID TO MILK FOODS.

Marriot has shown that children suffering or recovering from acute infectious diseases do not secrete gastric juice of sufficient acidity to overcome the buffer substances in the milk and by adding a sufficient quantity of lactic acid to the feed less gastric acid is "mopped up" by the buffer substances and more acid is available for gastric digestion.

Lactic acid may assist in splitting the protein in the stomach.

It has an important influence in preventing abnormal bacterial decomposition.

Its presence ensures a greater guarantee against the possibility of infection through food.

Preparations.

Lacidac (Cow and Gate) in 3 forms, Full cream, half cream and separated cream.

Buerlac—Buttermilk with lactic acid (Cow & Gate).

Eledon Nestle—Buttermilk with lactic acid.

ADDITIONAL AMOUNT OF IRON.

Foods containing extra amount of iron is indicated in cases of anæmia. See Table of infant foods.

Allergic Conditions.

Some infants show allergic intolerance to cow's milk. Excessive heating tends to neutralise the allergy producing principle in the milk. Moreover the secretion of gastric juice is deficient in these cases and so if the food is extra acidified, it helps digestion.

Preparations.

Allergilac.

Caprolac (Modified goat's milk)—Specially suitable in eczema.

Additions to food.

End of second month—Vitamins, orange juice, juice of vegetables (turnip, carrot, tomato etc.) Cod liver oil or other proprietary vitamin preparation.

Starch should not be added till the sixth month.

Table of caloric values of common articles of diet in infancy and childhood. (Pritchard.)

Milk, human	Calories	20	per ounce
Milk, cow's	,,	20	,,
Whey	,,	8	,,
Buttermilk	,,	10	,,
Cream, rich	,,	138	,,
Cream medium	,,	70	,,
Cream poor	,,	56	,,
Butter	,,	219	,,
Sugar	,,	112	,,
Egg, white	,,	14	,,
,, yolk	,,	188	,,
Soup	,,	3	,,
Honey	,,	88.6	,,
Jam, average	,,	81	,,
Bread, brown	,,	68	,,
Bread, white	,,	64.8	,,
Special Dried milks	,,		
Full Cream	,,	141	,,
Half Cream	,,	122	dry powder.
Skim	,,	188	,,
Allenbury No. 1	,,	134	,,
Allenbury No. 3	,,	118	,,
Benger	,,	187	,,
Mellin's	,,	185	,,
Prepared barley	,,	183	,,

Characters of Normal stool.

1. BREAST FED BABIES.

Homogenous consistency. Golden yellow colour. Reaction slightly acid ; odour slightly sour.

2. BOTTLE FED.

(*a*) Whole milk or milk mixtures.

One or two motions daily, firm, more dry, pale yellow and alkaline. Unpleasant musty odour.

When starch is added—Slightly brown.

(*b*) Dried milk—Colour same as above but softer and lard-like in appearance.

(*c*) When the amount of residue is very little due to the amount of food being too small or due to food being lost by vomiting.

Amount small. Colour, dark green-brown and looks like meconium. Contains excess of mucus.

May be constipated or lose and alkaline in reaction.

INDICATIONS OF EXCESS OF FOOD CONSTITUENTS.

1. Excess of carbohydrates—Stools tend to acidity, and diarrhœa and fermentation (frothy stools).
2. Increased casein or protein constituents—Tends to alkalinity and constipation.
3. Fat—Plays the determining part according to the salt balance and reaction of the intestinal contents as whether constipation or diarrhœa will result. A much higher percentage of fat will be tolerated when the diet is rich in protein (casein) than when the protein is markedly reduced.

INTRACRANIAL PRESSURE, Hypertension of.

To bring down increased intracranial pressure.

If it is not possible to do a lumbar puncture, the intracranial pressure may be brought down by.

1. Rectal injection of hypertonic saline or magnesium sulphate. Six ounces of a 50% solution of magnesium sulphate is best.
2. Intravenous injection of hypertonic saline. 70—100 cc. of a 15% solution or 50% solution of glucose in normal saline. Latter is specially useful in traumatic cases with persistent vomiting. Inject very slowly, not more than 3 cc. per minute.

   Do not give magnesium sulphate intravenously, it may cause respiratory paralysis.
3. Oral administration—Very unpleasant and nauseating.

INTUSSUSCEPTION.

Treatment by hydrostatic pressure—A general anæsthetic is given. An ordinary douche can or preferably a glass vessel is kept at a height of about 3-6 feet from the table. A few feet of rubber tubing and a large rubber catheter is connected with it. The catheter is inserted into the rectum for 2-3 inches, and the buttocks are pinched together to prevent the escape of fluid. The saline is allowed to flow for 3-4 minutes, from the douche can, and after disconnecting the catheter, the fluid is allowed to

return into a bed pan. A second and third injection are given over a period of about 10 minutes. The first return usually contains blood ; in successful cases the succeeding injections contain fæcal matter and flatus.

Signs of successful reduction—Diminution of the size of abdomen, passage of flatus, inability to demonstrate the intussusception tumour.

IRITIS.

In late stages the pupillary margin which lies in close contact with the anterior surface of the lens, becomes adherent to the latter. At the final stage the pupil is permanently and irremediably bound to the lens surface, but early instillation of a solution of atrophine sulph into the conjunctival sac is usually sufficient to break up adhesions while they are still merely fibrinous. In late cases, however, it is useless. A mixture of atropine, adrenaline and cocaine injected subconjunctivally is sufficiently potent to cause dilatation of the pupil. It is sold under the trade name of Mydricain.

KALA-AZAR.

Treatment.

Intravenous injection of pentavalent organic antimony compound.

Urea stibamine—Starting with ·05 Gm. and increased by ·05 Gm. at each injection up to ·2 Gm.

Napier prefers to start with ·1 Gm. for the first dose, ·2 for the second, and ·25 for the subsequent injections.

With Stibosan and Neostibosan—Initial dose of ·2 Gm. and subsequent doses of ·3 Gm.

A total of 2·7 Gm. of urea stibamine or 3·35 Gm. of Neostibosan is given for the full course of treatment.

LEPROSY.

Treatment.

As it is, it is very difficult to ensure regular attendance of patients in leprosy clinics and any treatment that is unpleasant or painful is sure to frighten them away.

Hydnocarpus ester with creosote or Hydnocreol is one of the best and cheapest for use in rural areas. It is easier to ensure a low standard of irritation with the esters. It is of great advantage to use the short guarded needles.

Injections of Hydnocreol starting with 2 cc. and gradually increasing to 10 cc., twice a week.

LEUCORRHŒA.

Leucorrhœa is often caused by infection with Trichomonas Vaginalis. In these cases Devegan (Bayer) has been found very satisfactory. Vagina is first washed out with a 0·5% lactic acid solution and then 1 to 3 tablets of Devegan is introduced. Next morning the patient is given a neutral hip bath. After one or two treatments the discharge diminishes. Devegan treatment has to be continued for sometime to effect complete cure.

LUMBAGO—See Page 16.

LYMPHOGRANULOMA INGUINALE or CLIMATIC BUBO.

The term lymphogranuloma inguinale is rather unfortunate, as it is apt to be confused with Granuloma Inguinale. See P. 67.

The disease is also known as Climatic Bubo or the sixth venereal disease ; the other five being, syphilis, gonorrhœa, soft sore, genital infection by Vincent's organism and granuloma venereum or ulcerating granuloma of pudenda.

It starts as a trivial papule on some part of the genital area, *e.g.*, coronal sulcus in men, and is followed by indolent enlargement of the inguinal glands. The glands suppurate and discharge through fistulous openings and the condition is very intractable. In chronic cases the enlargement of the glands may be excessive, but their removal may result in lymphatic obstruction and elephantiasis. In the female the infection spreads backwards to the anorectal gland and perineum and rectal stricture may eventually result.

Frei has developed an antigen reaction which is positive in all cases of the disease.

TREATMENT.

Nonspecific protein therapy, *e.g.* Typhoid vaccine, 4—6 injections at 4 or 5 day intervals. The dose is increased by 50 millions at a time, up to a maximum of 300 millions.

Solganol B has given good resuls in uncomplicated cases. Dose 0·25 to 0·5 Gm. intramuscularly daily up to a total of 15 Gm.

Fouadin and Dmelcos have also given satisfactory results.

A vaccine has been prepared but it is not yet available in the market.

Rectal Stricture—Iodoform suppositories.

Suppurating glands should never be incised but should be removed without rupturing the capsule to prevent wound infection.

MALARIA.

TREATMENT.

Quinine is still our sheet anchor in the treatment of the disease. The action of quinine is much enhanced by administration of alkalies, *e.g.*, Sodi bicarbonate.

Sodi. Bicarb.—gr. 60
Sodi. Citras—gr. 40
Water ad —Oz. 1.

This is followed by

Quinine Sulphas.—gr. 7
Acid Citric —gr. 30
Mag. sulph. —gr. 60
Water ad —Oz. 1.

Three times a day.

Although 30 gr. of quinine a day is usually recommended, for the average Indian 20 gr. a day is enough.

Chincona febrifuge, an old remedy, has recently been brought into use again. It is claimed to be superior to quinine as it contains other cinchona alkaloids in it.

Chinchona febrifuge —gr. 10
Pulv. acid Citric —gr. 20
Mag. sulph. —gr. 30
Ext. Glycerrhize Liq.—dr. 1
Spt. Chloroform —m. 10
Aqua ad —Oz. 1

Three times a day for 7 days, and then twice a day for 24 days ; 2½ hours after meals. It has a very unpleasant taste and very nauseating.

Injection of Quinine

Intramuscular injections should be avoided as far as possible as oral administration is quite effective. But there are certain circumstances when recourse should be had to this.

i. Oral administration has failed.

ii. Oral administration is contraindicated due to vomiting or gastritis.

iii. When intravenous injection is contraindicated in some very grave cases of cerebral or algid malaria.

Technique.

Wipe the needle carefully from quinine.

Insert the needle at right angles to the skin.

Push it well home into the Gluteus maximus, about 2″ below the middle of the iliac crest. If injection is given into the Deltoid, it should be 1″ or 2″ below the outer border of the acromion. It is always safer to give it into the buttocks.

Carefully avoid sciatic or radial nerve.

Massage the site well with a pad after injection.

Intravenous injection.

Indications—1. Severe cases of cerebral malaria with coma or convulsions.

2. Bad cases of algid malaria.

Quinine Bihydrochloride is used. 6-10 gr. in warm sterile salt solution with ½ cc. of Pituitrin or adrenalin.

Inject very slowly, one minute by the watch for every cc.

When there is probability or cardiac involvement, as evidenced by cyanosis and cardiac distress, it is advisable to give a preliminary intramuscular injection followed by a smaller intravenous one (6 gr.) five or six hours later. If this precaution is not taken, the sudden destruction of a large number of parasites may liberate sufficient toxin to bring about a fatal result.

Atebrin.

0·1 Gm. three times a day for five to seven days.

It should be discontinued if the patient develops yellow colouration of the conjunctiva or if the quantity of urine is diminiminished.

Plasmoquin.

The course of atebrin is followed by a course of plasmoquin. 0·01 Gm. two or three times a day for five days.

Atebrin is specially useful when the patient cannot tolerate quinine.

The combination of atebrin and plasmoquin sterilises the patient more effectively than quinine. So there is less chance of relapse.

Atebrin Musonate is given intramuscularly. Two injections of 0·375 Gm. at intervals of 24 hours. Some authorities reported satisfactory result with it, others were disappointed.

A preparation of atebrin is also available for intravenous injection.

Adrenaline is a useful adjuvant in the treatment of the disease.

MEASLES.

TREATMENT.

Irritation of the skin will be relieved by sponging with dilute sodium bicarbonate solution. If there is excessive itching, 1% carbolic acid may be added.

Immune measles serum finds its most brilliant application when administered in the incubation period. The serum has proved very effective in the prevention of measles encephalomyelitis.

Recently amidopyrine (pyramidon) has been used in the disease. It is claimed that in addition to the antipyretic effect the tendency to bronchopneumonia and some other complications are lessened.

Dose—1 gr. for each year of age up to maximum of 5 grains. Solution made of 1 gr. to the drachm and given every 4 hours, until the temperature has subsided.

Œstrin from placental extract has lately been used for preventive and curative treatment.

MENOPAUSE. Medical Aspects of

1. Stout lethargic and arthritic women are apt to have aches and pains—Thyroid will benefit.
2. Obesity of climacteric—Thyroid.
3. Vascular changes, hypertension, vasomotor instability (flushes). The blood pressure generally rises during the attack and falls after the attack with subsequent flushing. Œstrin, 500—1000 international units.
4. Recurrence of backache—Ovarian stimulation. Ovarian extract or diathermy of the cervix.

Note—Menopausal women usually have an excess of the hormone found in the urine of pregnant women, in the blood, so this preparation is not of much use.

5. Valerian has a real sedative effect on the autonomic nervous system.
6. Psychological part of the treatment is of immense value.

MENORRHAGIA.

TREATMENT.

The treatment is unsatisfactory. Find out the cause and treat the same.

If there is any suspicion of thyroid deficiency, supply it.

Calcium and vitamin D.

Ergot may be given from the time bleeding commences.

Progestine may be tried.

Epimenorrhœa—Too frequent menstruation.

Injection of antuitrin S or any other preparation of anterior pituitary extract, in large doses and over a long period may help. Calcium and vitamin D may be given simultaneously. Curettage may improve the condition and help diagnosis. Ergot is useless.

Metrostaxis—Prolonged menstruation.

Usually associated with some definite lesion.

Dilatation and curettage. If it continues after curettage and the patient is over 40, hysterectomy should be advised.

MIGRAINE.

TREATMENT.

Ergotamine tartarate (Femergin). It is of great value when given hypodermically. Tablets containing 1 mg. of ergotamine tartarate, given by the mouth twice daily is also useful. Regular administration of the drug to some extent decreases the frequency and severity of the attacks. For this purpose Bellargal (Sandoz), consisting of luminal, bellafoline, and ergotamine tartarate, given orally has proved most useful.

Attacks are supposed to be due to retention of fluids. So anti-retentional diet has been recommended—Liberal protein, restricted carbohydrate, and fat, restriction of salt and fluid. Caloric value of the diet should be low (20-28 calories per kilo.).

Use of ovarian and placental extracts have been suggested.

As a prophylactic ergotamine tartarate, 1 mg. twice daily, given orally, has proved very encouraging.

MUMPS.

TREATMENT.

Pain may be releived by Belladonna ointment.

Mouth should be kept scrupulously clean, with some mild antiseptic lotion.

Incidence of orchitis is lessened if the patient is confined to bed.

MYASTHIENA GRAVIS.

Treatment—Ephedrine gr. $\frac{3}{8}$—$\frac{1}{2}$ daily.

Hypodermic injection of Physostigmine salicylate gr. $\frac{1}{50}$ or Prostigmine 1-2 cc. has proved very valuable.

Potassium Chloride 4-6 Gm. in half a tumbler of water 6 times a day.

Prostigmine (Roche)—Injection of 4 cc. of the standard solution, three times a day. If it causes intestinal colic, give atropine.

Prostigmine may also be used orally—10 mg. dissolved in 1 dr. of water. 3 dr. (3 mg.) of this solution thrice daily.

NARCOLEPSY.

The old treatment was administration of ephidrine with or without caffiene. Ephetonin (Merck) is one of the proprietary preparations.

Benzedrine sulphate is the new drug which has been used for the purpose with very good results. The dosage is an individual problem. Start with 10 mg. and gradually increase the dose.

NEPHRITIS.

The older clinical and pathological classification have not stood the test of practical experience. At present no clinical classification based on post mortem findings is possible, so the treatment has been described as the condition presents to the practitioner.

It is very difficult to carry out the modern treatment without the help of a laboratory. Kidney function test forms one of the main items in assessing the excretory power of the

kidneys. Only one rough test can be carried out in a rural dispensary and that is the water elimination test. But it must be realised that it is very fallacious, specially in the hot weather in this country, when so much fluid is lost by visible or invisible perspiration.

Water elimination test.

A pint of water is given to the starving patient, and the urine is collected at hourly intervals. In the case of the normal person the sum total of the first 3 hours' specimen should be equal to the quantity of the fluid taken. Best results are obtained if the test is carried out early in the morning.

The following clinical types are recognised.

1. Acute Nephritis.
2. Acute Nephrosis.
3. Subacute Nephritis.
4. Chronic Nephritis with œdema.
5. Nephritis with slight or no œdema.
6. Mixed types.

1. **Acute Nephritis.** (Acute Diffuse Glomerulo-nephritis). Can be classified into 3 groups according to the prominence of the initial symptoms.
   i. Hæmorrhagic—Hæmaturia is the most important symptom.
   ii. Œdematous—Swelling of the face and body.
   iii. Toxæmic—Headache, backache, nausea, vomiting and dyspnœa.

Quite frequently a combination of the above is found. Blood pressure rises. Retinal changes and uræmic symptoms are liable to occur.

Course—May clear up or pass into a subacute stage.

TREATMENT—Milk diet should not be given as it contains too much of water and protein.

Rest in bed, for at least 4-6 weeks.
Avoidance of chill.
Daily record of blood pressure, urine volume and weight are the best guides of progress.
1st to 3rd days—Limitation of fluid intake.
Total fluid, 1 to 1½ pints in a day, as water, orangeade, lemonade, barley water, glucose drinks, imperial drink. No solids.

4th to 7th days—When the kidney has started functioning (diuresis is established) or when hæmaturia has diminished.

Milk—½ to 1 pint.
Glucose, imperial drink etc. Total fluid 1½ pint.
Benger's food, cream, sugar, weak tea.

8th day onwards.

Milk, banana, boiled fish, boiled chicken, milk pudding etc.

No salt so long as œdema is present.
No stimulating diuretics.

2. Acute Nephrosis. (Toxæmic nephritis).

Degeneration of the tubules of the glomeruli from some acute disease.

Cause.

Toxic—Pneumonia, scarlet fever, diphtheria, cholera.
Metabolic—Diabetes, Grave's disease.
Anæmia—Pernicious anæmia, Banti's disease.
Poisons—Mercury, phosphorus.
Clinically—No œdema. No hypertension. No nitrogen retention.

Urine—Trace of albumin. Generally less than 1%. A few granular casts may be present.

No special treatment is required. Treat the original condition.

3. Subacute Nephritis.

Cause—1. Sequel to acute nephritis.
2. Acute exaccerbation of chronic nephritis.

After an acute attack the œdema persists, blood pressure remains raised, heart enlarges.

Urine—Diminished in quantity and of low specific gravity.

TREATMENT.

Bed.
Salt free diet.
Second week—Add one egg and then some vegetables, *e.g.*, carrot, cauliflower (boiled).

10th day—Rice, vegetables etc.
Then gradually, stewed fruits, fish, potatoes.

An absolutely salt-free diet is not only unpalatable, but causes nausea, vomiting, headache, and leg-ache. The unpalatability of salt-free diet may be overcome by the addition of spices, *e.g.*, pepper, mustard, vinegar, lemon juice, ginger etc. There is no evidence to show that these things are harmful in kidney disease.

The newer practice of substitution of other Chlorides for Sodium Chloride promises to very much lighten the difficulties of salt restriction. The reaction of the total ash (incombustible inorganic residue) of the diet is the most important thing. So long as the reaction of the total ash is acid, diuresis will occur. A liberal diet with fairly high protein and substitution of potassium chloride for sodium chloride is all that is required. A small quantity of some vitamin D preparation may be added.

The patient is given 5 Gm. of potassium chloride every day which he takes with his food and no salt is used in the kitchen. He uses as much of the potassium chloride as he likes with his food, and at the end of the day, places the remainder in a tumbler of water and drinks it.

If the œdema does not respond to this treatment, try

i. Alkali Treatment.

Moderate amount of protein food, 60-80 Gm.

Amount of fluid taken should not be greater than the amount of urine passed.

Pot. Citras
Pot. Bicarbonate
Sodi Citras
Sodi Bicarbonate } each gr. 15
Water Oz. 1.

Three times a day.

If tetany appears (due to alkalosis), it is controlled by Calcium Chloride gr. 1, in 40 m. of distilled water, given intramuscularly.

ii. Diuretic Treatment.

Theophyllin (Theocin sodium acetate)—gr. 2-4, three times a day.

or Diuretin—gr. 5 three times a day.
or Guy's pill.

Salyrgan.

It is a complex mercurial diuretic. Its efficiency is increased by simultaneous administration of ammonium chloride.

½ cc. of a 10% solution is first given as a trial to see that there is no intolerance.

Administration.

Ammonium chloride gr. 30 is given by the mouth every 6 hours, in a capsule or the following prescription.

Ammon. chloride—gr. 30
Ext. Glycerrhiza Liq.—m. 20
Spt. Chloroform—m. 7
Aqua ad Oz. 1.

Next day 1 cc. of salyrgan is given intramuscularly. It may also be given intravenously, 1 cc. diluted with 5 cc. of normal saline.

Later, 2 cc. diluted with 10 cc. may be given on the 5th and 9th days.

If no diuresis occurs after the second injection it should be stopped.

iii. Purgatives *e.g.*, jalap, magnesium sulphate.

iv. Fluid drainage although recommended, is very difficult to carry out properly in rural practice. It is very liable to sepsis and these patients stand infection very badly.

4. Chronic Nephritis with œdema.

First determine if the patient is suffering from lipoid nephrosis. Clinically there are two types of lipoid nephrosis.

(*a*) Primary lipoid nephrosis.
(*b*) Secondary lipoid nephrosis.

i. LIPOID NEPHROSIS.

(*a*) Primary.

Onset—Insidious with malaise, headache, pallor and œdema.
Occurs in young adults.
Heart, not enlarged.
Blood pressure, not raised.
Retinal changes do not occur.
Complete recovery is the usual rule.

(*b*) Secondary.

Previous history of acute nephrosis with gradual failure of renal function.
Urine—Volume reduced. Abundant of protein. Hayaline, granular and fatty casts.
Water elimination test—low figures.

Treatment.

High protein and low fat diet.
Protein—120 to 240 Gm.
Carbohydrate—140 to 300 Gm.
Fat—20 to 40 Gm.
Large doses of thyroid extract is recommended.

ii. CHRONIC DIFFUSE GROMERULO-NEPHRITIS.

Sequel to an attack of acute nephritis in which the albuminuria persists and the patient suffers from varying degrees of œdema.

The course of the disease is prolonged and progressive. Heart hypertrophies, blood pressure rises. Retinal changes, *e. g.*, hæmorrhage, œdema of the discus etc. occur.

Urine may be diminished, normal or increased and hyaline and granular casts may be present. Water elimination test is of low value.

Treatment.

Early—Same as that of chronic nephritis with slight or no œdema.

5. Chronic nephritis with slight or no œdema.

(Chronic interstitial nephritis)

Clinically.

Blood pressure raised.
Heart enlarged.
Urine contains just a trace of albumin.

For prognosis and treatment it is important to decide whether the kidney lesion is benign, in which renal insufficiency is unlikely to develop or whether it is malignant with failure of kidney function.

i. Benign.

Clinically—Generally people of about 50-70 years of age.
Symptoms are usually due to high blood pressure, myocardial weakness and arteriosclerosis.
Lassitude, headache, dyspnœa and cardiac pain.
Temporary paresis or transient aphasia may occur.
Opthalmoscopy—Tortuous arteries, constricted veins, retinal hæmorrhages may be present.
Water elimination test, normal.

Treatment—It is that of cardiovascular degeneration and high blood pressure. No special treatment is required for albuminuria.

ii. Malignant.

Generally males between 40-50 years of age.

Onset insidious, with frequency of mictuirition, lassitude, anorexia, headache and giddiness.

Blood Pressure—Systolic over 200 mm., diastolic 140-160. mm.

Ophthalmoscopy—Albuminuric retinitis may occur, arteries narrowed, veins dilated, discs swollen, red, edges blurred.

Water elimation test—Low figures.

Treatment.

Moderation in everything, exercise, smoking, alcohol. Avoidance of chills.

Diet—The amount of protein is determined by the amount of nitrogen retention (estimation of blood urea). Usually a low protein diet is suitable. The patient should preferably be kept in bed when on dietetic treatment.

Regular action of the bowels should be assured.

It is useful to give some calcium as well. Calcium lactate, gr. 15 thrice daily with Collip's Parathormone 10-20 units a day. Or Collosol calcium intravenously 1 cc. daily or calcium chloride 1 gr. in 40 m. of distilled water intramuscularly.

NEURITIS, PERIPHERAL.

Deficiency of a particular vitamin B is liable to cause peripheral neuritis. Polyneuritis of pregnancy is due to this. Recently it has been claimed that the polyneuritis of alcoholism is also due to this and has been successfully treated with vitamin B.

Treatment with preparations of vitamin B (Beemax, Marmite) for oral administration have become very popular in all types of peripheral neuritis.

Owing to the uncertainty of the fate of vitamin B when given by the mouth, parenteral preparations are now in vogue. Several firms are now preparing vitamin B concentrates suitable for hypodermic use.

NON-SPECIFIC PROTEIN THERAPY.

NON-SPECIFIC REACTION.

The reaction varies from an almost imperceptible one to extreme shock associated with profound vasomotor disturbance and other constitutional phenomena. The reaction depends on the substance used, the dose, method of administration as well as on the physical condition of the patient and the number of injections previously given.

Intramuscular injections usually excite comparatively mild reactions. When given intravenously, the reactions are sharper and make their appearance more promptly. Immediately following the injection there is leucopenia ; with the onset of chill, a gradually increasing leucocytosis, specially of the polymorphonuclear type, occurs.

Focal Reaction—Injection of foreign protein is followed by exaggeration of symptoms in the original focus of the disease. This is most easily demonstrable in tubercular disease.

General Reaction.

Immediately after the intravenous injection, there is a latent period of no symptoms and then this is followed by chill. The temperature then begins to rise. From the period of onset of fever to the period of maximum fever is the first or negative phase.

The second or positive phase extends from the height of fever to the return of normal temperature.

The most potent function of foreign protein reaction is the mobilisation of immune bodies in the circulating blood.

Severe and even fatal reaction may sometimes follow intravenous injection.

Clinical Application.

Acute conditions frequently require a fever reaction. Chronic conditions would best be affected without a fever reaction.

It has been used in the more acute forms of illness as typhoid fever, pneumonia, septicæmia etc. It is very useful in General Paralysis of the insane (malaria therapy).

ACUTE AND CHRONIC ARTHRITIS.

About 50% of the patients of acute arthritis are free from discomfort after 2 or 3 injections.

In chronic arthritis the immediate effects are sometimes very striking, but seldom the effect is lasting.

Typhoid vaccine is particularly useful in the febrile.

In the chronic well established cases intravenous injection of streptococcal vaccine, too small to excite a febrile reaction —starting from 50,000 bacteria and gradually increasing to 50 or 100 million.

DISEASES OF THE SKIN.

It has proved of considerable value in certain inflammatory conditions, *e.g.*, farunculosis, carbuncle and other staphyococcal infections.

B. Coli. vaccine has been found specially useful in urticaria.

It may be tried in anthrax and erisepelas.

DISEASES OF THE EYE.

Boiled milk or typhoid vaccine in iritis, uveitis, keratitis, conjunctivitis and other inflammatory conditions of the eye. It may be worthwhile trying in trachoma.

GYNÆCOLOGICAL CONDITIONS

The greatest success of this method of treatment has been achieved in this field. It has proved most useful in adnexal infections of acute or subacute type and in pelvic cellulitis. The pain and tenderness are invariably relieved.

GENITO-URINARY INFECTIONS.

It has proved useful in gonorrhœa and its complications. Particularly good results in epididymitis and gonorrhœal arthritis.

GASTRIC (PEPTIC) ULCER—It has been used for this.

VASCULAR DISEASES.

Successful results have been reported in Buerger's disease, gangrene of arteriosclerosis, the purely vasomotor type of vascular occlusion. Particularly good results haye been obtained in thromboangitis obliterans.

The beneficial effects are probably more due to vasodilatation than leucocytosis or mobilisation of immune bodies.

ALLERGIC DISEASES.

Asthma, hay fever, urticaria etc. See also P. 2.

Contraindications.

1. Advanced arterial, renal or cardiac disease.
2. Conditions of marked protein sensitivity, *e.g.*, angioneurotic œdema, giant urticaria etc.
3. Exhaustion after prolonged illness.
4. Hæmorrhagic conditions, *e g.*, hæmophilia.
5. Chronic alcoholism.
6. Pulmonary tuberculosis, active or quiescent.
7. Exaggerated nervous sensibility, *e.g.*, hyperthyroidism.

VARIOUS PREPARATIONS.

The optimum dose have to be determined for each patient. It will depend, as has already been stated, on the substance used, the method of administration and previous condition of the patient. It is better to start with small doses so that a severe reaction may not occur and then gradually increase the dose until the optimum dose is found out.

1. Milk—Easily procurable and most commonly used. Start with 5 cc. of boiled skimmed milk intramuscularly.
2. Typhoid vaccine.
3. Sulphur—1 to 2 cc. of 1 to 2 per cent. sublimed sulphur in olive oil, injected in the lateral aspect of the thigh (deep to the fascia lata), every 4 or 5 days, increasing each dose by 1 cc. The temperature rises after 6-18 hours to about 104 degrees.
4. Aolan.
5. Hæmoprotein (Parke Davis).

ORIENTAL SORE.

TREATMENT.

Cignolin (Bayer)—Application of the drug induces rapid healing, specially useful for intractable sore on the nose. It should be applied for 14 days or longer. The method is simple and painless.

Tarter emetic intravenously. Pentavalent Compounds of antimony have also been used with satisfactory results.

Barberine Sulphate—By local injection into the sore, $\frac{1}{3}$ gr. dissolved in 5 cc. of distilled water. Injections at

weekly intervals. After injection a dressing of hypertonic saline is applied.

Recently vaccines have been prepared from L. Tropica ½ 1 cc. injections twice a week up to seven doses have given very satisfactory results. It is of most value for multiple sores and those on the face. The vaccine is not yet available for general use.

The mucocutaneous form is more resistant to antimony. Fouadin intramuscularly is said to heal the lesion rapidly. Dose 1·5—3·5 cc. (for adults) in the first two injections and subsequently 5 cc.; 20-30 injections may be required.

Carbon dioxide snow is very good.

OSTEOMYELITIS, ACUTE.

Endeavour to localise the disease by applying Bier's bandage and hot applications.

20 cc. of staphylococcal antitoxic serum hypodermically.

Opening up the bone is not a matter of great urgency. If the local pain is very severe, make an incision down to the periosteum and drill one or two holes in the bone. A vaseline dressing may then be applied and the limb encased in Plaster of Paris.

When local pain is not severe more conservative attitude is wise, and the appearance of subperiosteal pus would be the first sign of active interference.

OTITIS MEDIA.

A. Acute.

TREATMENT.

Bed.

Calomel.

If no perforation, drop warm glycerine carbolic (2%) every few hours in the ear. Sedonan drops often relieve the pain.

Hot fomentations.

Indications for paracentesis (incision of membrane).

1. Severe pain or fever not relieved within 24 hours.
2. Injection or bulging of the tympanic membrane.
3. Severe deafness.
4. Vertigo, nystagmus or vomiting.

The incision heals more rapidly and with less damage to hearing than spontaneous perforation.

Myringotomy. Technique.

A general anæsthetic must be given.

Disinfect the meatus—Plain spirit for children and Tinct. Iodine for adults.

Final cleaning with ether.

Flash a torch and do the operation under vision.

Incision—Start a point midway between the centre of the membrane and the posterior margin and sweep downwards and slightly forwards to end near the lowest part of the membrane. The knife must be felt to penetrate the membrane. Mop out the blood and pus and disinfect again. A strip of sterile gauze is put in (loosely), and dressing applied.

If a proper myringotome is not at hand, use an old cataract knife and guard the lower three quarters of the blade by wrapping it with adhesive plaster.

After treatment.

Avoid syringing and Hydrogen peroxide.

Change the strip as often as it is wet.

Wipe the ear and drop warm glycerine carbolic solution every 4 hours.

Recently very good results have been reported by gentle syringing (with a record syringe) of 33% alcohol to which is added 2% percaine.

B. Subacute or Chronic.

TREATMENT.

i. With very thick discharge.

If there is a polyp or excess of granulation tissue, cauterise it with silver nitrate stick.

Wipe the discharge with mops of cotton wool.

Put powdered magnesium sulphate in the ear every morning after cleaning the ear with cotton wool swabs.

Don't use hydrogen peroxide.

Don't syringe.

ii. When the discharge is very little or has stopped.

Wipe the meatus with cotton wool swab and put in 1% iodum powder in boric acid.

The best way to prepare the powder is to use a solution of iodine in spirit and then mix with boric acid and let the spirit evaporate. I found that if powdered iodine is mechanically mixed with boric power freshly every time it is used, it is

equally efficacious. The powder if stored, must be kept in air-tight amber coloured bottle, otherwise the iodine will evaporate.

PILES, Internal.

Injection Treatment.

The results are very satisfactory unless the disease is too far advanced. It is practically painless compared to the other methods of radical treatment. The patient need not be kept in the hospital. No special preparation is required. An enema should be given if the patient did not have the usual morning action of the bowels.

Solution—I use 10% carbolic acid solution in equal parts of glycerine and water and am quite satisfied with the results. Few grains of menthol may be added to it. Others use 5% carbolic acid in almond oil.

Technique—Wash the rectum with weak potassium permanganate solution.

Introduce the speculum. See that there is good light or flash a torch.

Wipe the rectum with weak lysol solution.

Hold the pile gently with (preferably) a curved pair of forceps. An ordinary aural forceps may serve the purpose.

Inject 2-5 drops of the solution between the mucous membrane and the wall of the vein. See that not too much of the solution is injected, otherwise the mucous membrane will slough and an ulcer will form. The mucous membrane over the pile should not be unduly blanched after the injection.

I have not seen any bad results if the vein wall is punctured.

If an ordinary record syringe is used see that the needle is fixed tightly on to the syringe, otherwise it may come off during injection, specially if a thick solution is used.

Inject each pile separately.

Swab the rectum with weak lysol solution and withdraw the speculum.

If an ordinary wire speculum is used, the piles with the rectal mucous membrane are apt to be dragged out during the withdrawal of the speculum. It is very painful and unless one is careful to avoid it, the patient most likely will not report again for further injections. So if you are using a wire speculum, plug the rectum with cotton wool soaked in weak

lysol solution fairly tightly right up to the farthest end of the speculum and then gently withdraw the speculum keeping it half closed with the cotton wool plug inside it. This will keep the piles and mucous membrane pressed outside the prongs of the speculum and they will not be dragged out when the speculum is withdrawn.

PLAGUE.

Treatment. Some successful results have been reported with Bayer 205. Intravenous injection of 0·9 Gm. in 10 cc. of distilled water.

Recently Sokhey has claimed very good results by using a specially prepared serum.

PNEUMONIA LOBAR.

Every doctor has got his own way of treating this disease, and no definite line of treatment can be dictated. I have used the undermentioned line of treatment for several years and I insist it to be carried out in my wards, as I am satisfied with the results.

The first essential is FRESH AIR.

Apply antiphlogistine when the diagnosis is certain.

S. U. P. 36—One injection a day for two days only, in the early cases. Don't use it if there is any jaundice.

If there is reason to believe that the leucocytic response will not be normal, or the total white blood cells are below 16,000—Give injections of sodium nucleate 1 cc. twice daily.

Constipation—Potassium permanganate enema.

Cyanosis or air hunger—Give Oxygen inhalation if available. To be effective it must be given with a catheter in the nose.

Sleeplessness—Paraldehyde at night.

Blood pressure below 90—Pituitrin $\frac{1}{2}$ cc. B.D.

Brandy—One drachm every 3 hours.

Glucose and milk feeds.

From the 5th day onwards until crisis is over—Strychnine and digitaline injections. Three injections on the 5th, 6th and 7th days. Every four hours on the 8th day and on the 9th day if necessary.

Acute heart failure—Coramine or Cardiazol.

Engorgement of right heart—Venesection.

PROSTATE, HYPERTROPHIED.

Treatment—For the benign enlargement of prostate recently some hormonic treatment has been suggested and it may be tried when operation is not feasible. It is stated that it should be given for at least 3 months before any good result can be obtained.

Opocaps. Prostatic, for oral administration—Gr. 3 three times a day.

Opojex—For injection.

They are prepared by British Organotherapy and can be obtained from Smith Stanistreet & Co., Calcutta.

Testo-sterone Propionate is said to be useful, when given subcutaneously or intramuscularly. (Preparation—Perandren. Ciba).

Steinach II ligature. It has been claimed that this simple operation relieves the symptoms of hypertrophied prostrate.

Operation—Under local anæsthesia the testicles are exposed. A silk ligature (with a needle) is passed between the epididymis and the testicles through the digital fossa, distal to the junction of the head of the epididymis and the testicle). The ligature encircles the vasa efferentia and then tied tightly, so as to occlude the vasa efferentia. The same procedure is carried out on the other side.

PRURITUS ANI

Treatment.

Unguentum acid Salicylic Ung. acid Benzoic Lanolin Paraffin	half an ounce of each.

Oil of Cade—m. 4.

Applied night and morning.

Proctocaine—Infiltrate the perianal fat and the medial margins of the ischiorectal fossæ by injecting the solution in the area.

PUERPERAL SEPSIS

Treatment.

1. PREVENTIVE.

i. Vulva, hands and gloved hands should be disinfected with 30% Dettol cream after washing thoroughly with soap and water. Undiluted Dettol may be used if desired.

ii. If sufficient quantity of boiled water is not available it should be chemically sterilised. Cyllin Dr. 1 in 3 pints of water is recommended for the purpose.

iii. The application of antiseptics to sterilise the vagina before delivery in an uncomplicated case is inadvisable. For operative delivery, brilliant green, crystal violet or dettol may be used.

iv. In a case where sepsis is expected, prophylactic intravenous injection of watery solution of iodine with potassium iodide is recommended. This is very effective if given before the sepsis actually sets in, and as this drug is always handy and inexpensive, it should always be tried specially in rural practice when other drugs are not available.

2. CURATIVE.

i. Remington Hobb's Treatment—Intrauterine injection of sterile glycerine through a female catheter introduced in the uterus. About 20 cc. of glycerine is injected into the uterine cavity. This is done every morning until the temperature subsides. The patient is kept in Fowler's position.

ii. Sera have given indifferent results and it should be realised that it is not absolutely harmless.

iii. Recently it has been demonstrated that quite a number of cases the infection is caused by gas gangrene bacillus. In these cases, gas gangrene serum is useful.

iv. Prontosil.

Very encouraging results have been reported by certain German observers, by using PRONTOSIL, a chemotherapeutic agent, prepared by Bayer & Co. in the treatment of Hæmolytic Streptococcal infection. This has recently been favourably reported on by Colebrook.

It is only useful in hæmolytic streptococcal infections.
Method of administration.

The contents of one ampoule (5 cc.) are injected intramuscularly 2-3 times a day. At the same time the patient is given 1-2 tablets or more, three times daily, chewed after meals, with plenty of fluid.

In view of the severe malaise and nausea induced by intravenous injection it has been given up.

The amount given by injection may have to be increased to 60 or 90 cc. and may have to be repeated, depending on the seriousness of the illness and the condition of the patient.

Generally not more than 20 cc. is required each day combined with oral administration as indicated above.

When the fever begins to subside and general condition improves, treatment may be continued with tablets alone.

Occasional occurrence of reddish urine following the administration of prontosil is due to the excreted dye-stuff and has no pathological significance.

A complication, sulphæmoglobinæmia, may arise during treatment with Prontosil. It is manifested by cyanosis, specially of the lips without any cardiac or respiratory distress. It is harmless if prontosil is stopped as soon as the cyanosis is noticed. Epsom salts should never be given to patients on prontosil, nor in fact any drastic purgative, for even those not containing sulphur increase the sulphides in the bowel by their irritating action.

RESPIRATORY SYSTEM, MINOR DISEASES OF

I. Common Cold.

TREATMENT.

In the early stages.

(*a*) Liquid paraffin with menthol ½-1 gr. to the ounce.

This solution is dropped in each nostril with a pipette or dropper. This is the main principle of most of the patent medicines sold as Mistol, Endrine, Ephedrol etc. and is as good as any of the more expensive preparations.

(*b*) Glegg's Treatment.

Liquid paraffin 3 parts, white vaseline 1 part, and menthol ½ a grain to the ounce. This is applied to the nasal mucous membrane.

(*c*) Inhalation of chloretone, Tinct. Benzoin Co. or Eucalyptus oil. The following is a very convenient way for eucalyptus oil inhalation. Soak a handkerchief in boiling water, squeeze out the water and pour a few drops of the oil on it. Keep it hanging at the bed-head of the patient.

(*d*) Benzedrine Inhaler (Menley & James)

Inhalation relieves nasal congestion and give immediate relief. Should not be inhaled too frequently.

In more chronic stages.

Normal saline oz. 1 with 5 gr. of common sugar allowed to trickle down the nose in recumbent posture.

Irritating dry cough which results from a tickle in the throat (this is due to inflammation of the lingual tonsil)—Paint the throat thoroughly with a bent probe on which cotton wool is wound, with a solution of ferric chloride in glycerine, 120 gr. of ferric chloride in 2 oz. of glycerine. Most of the cough lozenges contain this as the main ingredient.

II. Acute Sore Throat.

1. ACUTE SIMPLE PHARYNGITIS.

In the early stages give a laxative and Dover's powder. It may clear up.

The following mixture is almost a specific in sore throat. Use the draught without Tinct. Aconite if there is no fever and stop the Tinct. Aconite as soon as the fever subsides.

Tinct. Aconite	m. 2-5
Pot. Chloras	gr. 5
Tinct. Ferri Perchlor.	m. 20
Liq. Hydrarg. Perchlor.	m. 10
Lig. Strychnine	m. 5
Glycerine	dr. 2
Aqua Chloroform ad.	oz. ½

One mark every 4 hours or better still ½ a mark every 2 hours. The mixture should be gargled and then swallowed.

Remember that acute pharyngitis forms the first stage of many infections, *e.g.*, influenza, tonsillitis, laryngitis, prodromal phase of enteric fever, measles and small-pox. It is also an early sign of secondary syphilis and may also be caused by iodides.

2. ACUTE SEPTIC PHARYNGITIS.

According to severity of the local manifestations, it may be catarrhal, œdematous, suppurative, hæmorrhagic or gangrenous. Except in the first, the mortality is very high.

Iron is of definite value. Tinct. Ferri Perchlor. m. 15 with glycerine m. 60 is painted and swallowed.

3. ACUTE TONSILLITIS.

Except in very mild cases the patient should be confined to bed.

Diet—Limited to fluids, milk, glucose, lime 'sarbat'.

Medicine—Mercurial purgative.
Sodi Salicylas or aspirin with alkalies.

For children—One drop of Tinct. Aconite in water every 2 hours.

Gargles are useful—Water should be as hot as can be tolerated with some mild antiseptic as Listerine, Thymol, Potassium chlorate or Glycothymoline.

If gargling is impossible—Douche out the fauces, holding the head over a basin with the mouth open.

Heat may be applied externally—Poultice, kata-plasma kaoline, antiphlogistine etc. The supporting bandage should be carried round the head and not round the neck.

Lozenges containing formalin and black currant, *e.g.*, Formamint, Allen and Hanbury's Black currant throat pastilles are useful.

4. PERITOSILLAR ABSCESS—The pus exists in the supratonsillar fossa which is $\frac{1}{3}$ to $\frac{1}{2}$ inch from the edge of the anterior pillar of the fauces above its centre. The usual tendency is to incise too near the tonsil; the abscess points above and external to it in the soft palate about midway between the base of the uvula and the last upper molar and it is here that the incision should be made. It can be opened with a tenotomy knife with three quarters of the lower part of the blade being guarded by adhesive plaster and the opening dilated with artery forceps. Occasionally the opening may become closed and then it has to be opened up by a probe or a pair of fine pointed artery forceps.

III. Acute Catarrhal Laryngitis.

Treatment is the same as for acute catarrhal tonsillitis.

Local applications of cold compresses are soothing and are generally preferred.

Gargles are useless and they should be replaced by inhala-

tions. Tinct. Benzoin inhalation is as good as any other. Eucalyptus oil may also be used.

Throat may be sprayed with the following. Patient is asked to take deep breaths when spraying is done.

Menthol gr. 3.
Cocaine (alkaloid and not hydrochloride) gr. 6.
Oil Turpentine dr. 1½.
Liquid Paraffin ad oz. 1.

One lozenge, made of potassium chlorate and borax with 1 in 1000 of Cocaine hydrochloride, may be sucked.

For young babies—Tinct. Ipecac. Co. is useful.

IV. Acute Tracheitis.

Soreness and sensation of constriction behind the sternum ; cough is hard and dry and accompanied at the most by slight mucus ; skin is harsh and dry. Tongue coated. Slight fever.

Treatment.

A sedative expectorant is best. Following is useful.

Vin. Antimony —m. 10
Vin. Ipecac —m. 10
Spt. Ether. Nitrosi—m. 30
Liq. Ammon Acetatis—dr. 2
Syr. Lemonis —dr. 1
Aqua ad —oz. 1

Remember that Ipecac. and Antimony are powerful cardiac depressants and therefore do not use them in patients with heart disease.

When the congestion is relieved and free expectoration has started, and not before that, use a stimulant expectorant, *e.g.*

Ammon Carb—gr. 5
Tinct. Camph. Co.—m. 20
Syr. Scilla—m. 30
Syr. Tolu—dr. 1
Inf. Senega ad oz. 1
Three times a day.

For substernal tightness or pain—Apply mustard plaster over the upper part of the sternum for 15—30 minutes.

V. Influenza.

Prophylaxis—During an epidemic, gargles night and morning containing a mild antiseptic is useful.

. The patient should be put to bed as soon as a mild attack is suspected.

TREATMENT.

Bed.

Room must be well ventilated and warm (in winter). Consecutive pneumonia very seldom occurs if this rule is observed.

Purgative—Calomel and Saline.

Diet—First two days, warm fluids and very easily assimilable solids (if the patient desires).

Drug—A dose of aspirinand Dover's powder, gr. 10 of each.

The catarrhal form, in the early stages is confined to the upper respiratory tract and so effort must be made to prevent the infection spreading downwards. Influenzal pneumonia has a very high mortality and most fatalities from influenza are due to consecutive pneumonia. A nasal spray, gargle or inhalation is very good for the purpose.

A few crystals of menthol in a jug of boiling water *stood near* the patient will help to keep the sinuses free.

Stimulating cough mixtures.

Inhalations of Friar's balsam, pine oil, oil of gemenol, will soothe the intense irritation of tracheitis.

While endeavouring to ease the tracheal cough, bronchial cough should be encouraged.

In cases of gastro-intestinal symptoms with vomiting few drops of Tinct. Iodine in water or cocaine gr. $\frac{1}{6}$ may be useful.

Keep an watch on the heart, specially in the more severe cases.

RHEUMATIC FEVER.

TREATMENT.

Confinement to bed.

Joints supported in the position of maximum comfort.

Diet—Milk, diluted with water or mineral water.

Abundant fluids in any form, *e.g.*, imperial drink, glucose water, whey etc.

When the fever declines—Milk, vegetable soups, chocolate drinks, fruits. Tea and coffee are not allowed.

Meat in convalescence.

Drug—Sodium Salicylate.

Begin with gr. 20 every 2 hours during the day, and 4 hourly at night. (Total of 180 gr. in 24 hours).

As the fever and pain diminish these quantities may be given less frequently.

If no amelioration in 48 hours, the dose has to be increased by 50%.

The symptoms of saturation with the drug are, tinnitus, deafness, slight visual disturbance, nausea and vomiting. When these symptoms occur the dose should be cut down.

The only preventive of cardiac complications at our disposal is early and liberal use of salicylates.

The gastric irritation manifested by nearly all patients can be lessened by giving the same or double the amount of sodium bicarbonate with the salicylate.

Treatment of Complications.

1. Heart.

   Active stage—Blisters in the precordium.
   Later Sodium Iodide internally.

   Absolute rest in bed in recumbent posture for 3 months. The transition from recumbency must be very gradual. It must be spread out over a week. The patient is gradually raised by adding more and more pillows.

   Then the amount of exertion must be very carefully regulated.

2. Hyperpyrexia—Cold pack and volatile stimulants. Iodine is useful in prolonged cases.

3. Local—Maintain the position of the joints with splints and pillows, so as to ensure optimum comfort.

4. Convalescence—Quinine and hypophosphites are useful during convalescence and iron may be given at a later date.

RHEUMATOID ARTHRITIS.

Probable causes.

1. Infection.
2. Disordered metabolism.
3. Vitamin deficiency.
4. Disordered action of the endocrine sympathetic system.
5. Allergy.

Treatment.

Removal of any septic focus that may be present.

If there is any glandular deficiency—Thyroid, parathyroid or ovarian extract may be given.

Iodine injection as collosol iodine.

Sulphur injections as collosol sulphur or solution in olive oil. See Non-specific Protein therapy.

Histamine—Good results have been obtained by using the drug by cataphoresis, of ointment or injection.

Malaria therapy has recently been used (as in cases of general paralysis of the insane).

Physical therapy—Application of heat, baths etc.
Protein shock therapy.
Gold therapy—Sanocrysin.
Dose. 0·25 Gm. for two doses.
0·35 Gm. for two doses.
0·5, 0·65 and 0·75.

The intervals between each dose are as a rule 4-5 days at first and then 8-14 days later on, according to the reactions.

If fever occurs, wait until the temperature is normal again.

In case of dermatitis, injection must not be given until it is entirely gone.

The medicinal treatment must be accompanied by physiotherapeutic measures as massage, exercise, radiant heat etc.

SCAPHOID, CARPAL, Fracture of.

Fracture of the carpal scaphoid is one of the commonest injuries about the wrist joint. It is very difficult to diagnose the lesion without X-ray, and when there is reasonable doubt the injury should be treated as fracture of the scaphoid. Because an improperly treated fracture of the scaphoid will always cause functional impairment and an impaired wrist means an impaired power of earning one's livelihood. With early diagnosis and treatment complete cure can be assured in 90%, whereas some functional impairment is the rule in the late and improperly treated cases.

SYMPTOMS AND DIAGNOSIS.

The fracture is produced by falls on the hyperextended hand. Very few special symptoms are produced, and therefore it is so liable to be overlooked. Swelling, pain and tenderness in the anatomical snuff box (boundaries—Tendon of Extensor Pollicis Longus on the ulnar side, and tendons of Abductor Pollicis Longus and Extensor Pollicis Brevis on the radial side, the floor is formed by the scaphoid bone). Usually there is very little displacement.

Murphy's 'Tapping pain'—Hand is held in radial deviation with the fingers flexed. The distal ends of the metacarpal bones are gently percussed. On striking the third matacarpal, os magnum is driven against the scaphoid and in case of fracture even a slight tap causes pain.

Tapping pain is most marked in fracture of scaphoid when the hand is in radial deviation. In fracture of semilunar it is most marked when the hand is in ulnar deviation. No pain is produced in dislocation of the semilunar.

PROGNOSIS.—It is the universal experience that the end results of fracture of scaphoid which has been overlooked, tend to be a good deal worse than those which are, recognised and treated immediately. Prognosis for recent cases is good. Even in late cases if the patient undergoes the treatment diligently for a long period, there is good chance of obtaining fairly good results.

TREATMENT.

Reduction (if there is any displacement of the fragments)—The hand is flexed and deviated to the ulnar side, pressure is applied at the same time in the anatomical snuff box, and the broken pieces are moulded on to the head os magnum.

A plaster splint is applied and the hand is kept in dorsiflexion for two weeks. The splint is then removed and massage and movements are commenced.

Fractures of the tuberosity being extra-articular heal readily after immobilisation for two weeks.

Intra-articular transverse fractures do not heal so readily and may produce a certain amount of functional impairment. Owing to this, specially in those cases which are seen late and in which free movements of the wrist are impaired, it was the usual custom

previously to excise these fragments. But recently Böhler has demonstrated that if these cases are kept immobilised in dorsiflexion in a light plaster jacket or by some other contrivance for *four to six months*, bony union will occur not only in recent cases but even in late cases. The splint is applied on the dorsal aspect of the hand and forearm, extending from the base of the fingers to the elbow joint, with the wrist in slight dorsiflexion and ulnar deviation. This treatment should be carried out in all late cases.

If bony union does not occur after six months, the fragments may be excised, but results are not very satisfactory.

SCIATICA. See also Backache.

TREATMENT.

1. Try to find out the cause. If any obvious cause is present, *e.g.*, infective focus, tumour or deformity or disease of the spine or pelvis, apply proper treatment for the condition found.

II. Idiopathic.

(*a*) Rest, warmth, dry heat and analgesic drugs, specially in acute stage. No active treatment in the acute condition.

(*b*) Injection.

i. Perineural.

The patient lies on the abdomen. The nerve is injected at a point at the junction of the medial third and lateral two-thirds of a line joining the greater trochanter and the ischial tuberosity. The needle is inserted at this spot and is pushed directly downwards through the gluteal muscles until the nerve is reached, when a sharp shooting pain down the leg is experienced by the patient. 100—150 cc. of Normal Saline is then injected into the sheath of the nerve. If possible, it is better to use a fine trocar and cannula. It may be necessary to repeat the injection, and as a rule, three will suffice.

ii. Epidural Injection.

This is done with a long needle about 8 cm. long. The needle is inserted through the sacral hiatus into the sacral canal for about 6 cm. (up to the 2nd sacral vertebra). Wait a little while to see if any cerebrospinal fluid comes out. If it does not, the injection is given.

The injection consists of warm sterile normal saline. To the first 10 or 40 cc. of the solution is added 0·125 Gm. of novocaine with adrenalin, and a few minutes are allowed to elapse after the injection to obtain the analsthetic effect. In all 60-80 cc. of solution is injected at a time. The average number of injections required is three, but sometimes five or more may be necessary.

(*c*) Nonspecific Protein Therapy.

Milk or Sulphur injections. The latter is specially advocated by some.

(*d*) Stretching the Nerve.

i. Patient lies on his back. The leg is lifted with one hand, while the other hand steadies the pelvis. Keeping it fully extended at the knee, the thigh is flexed (at the hip joint) as far as possible.

ii. Operative.

The nerve is exposed about midway between the greater trochanter and the ischial tuberosity. It is freed and then the index finger is hooked round it. Then it is steadily pulled out to stretch it. The force employed is the amount just sufficient to lift the pelvis up from the table.

SERUM SICKNESS.

With the increased popularity of serum treatment, serum sickness is becoming more and more common. So it is more or less imperative that two doses of serum should always be given at intervals of 3-8 days. Although it is more common in persons who have had serum treatment previously, the disturbing symptoms may appear even after the first dose of serum in an individual who never had any serum injection before. Reactions following first injections are rare and mild in nature. Those after a second injection are rapid in onset, may be very severe or even fatal.

It is an induced reaction which may appear in a non-allergic individual. The incubation period between the injection of serum and appearance of the symptoms is usually 8-12 days, but this period may vary from a few minutes to 24 days or more. If the second injection is made during the interval in which the antibodies are still present in the circulating blood as from the twelfth day to the fifth month, the reaction is more likely to occur immediately.

SYMPTOMS.

Fever.

Vomiting.

Cutaneous eruptions—They are highly polymorphous, different forms being present at the same time.

Local lesions appear first. They are usually urticarial.

General eruptions come out in crops extending over several days and are intensely pruritic. They are often deep red and maculo-papular, and accompained by marked constitutional reaction.

Joint pains and tenderness. Commonest joints being the metacarpo-phalangeal.

Oedema of the eyelids and face.

Enlargement of the lymph nodes draining the area injected.

Nerve pains may be present.

NOTE. The possibilities of serum disease supervening after an injection of therapeutic serum, should not contraindicate its use in a case of urgent necessity. The illness is disagreeable but very seldom fatal. Only in the very few allergics who are hypersensitive to horse serum, is the reaction very severe.

Before giving any large dose of serum, or giving it intravenously in any disease, make a skin test and be sure that the patient is not hypersensitive to the serum.

Skin Test—Give an intracutaneous injection of ·02 cc. of 10% serum. A positive reaction appears generally within about 15 minutes and always within an hour. It consists of a wheal surrounded by red areola. It is better to make a similar injection of distilled water as control and compare the reactions.

If the patient is hypersensitive to the serum, he must be desensitised before further injections are given.

Desensitisation—Give hypodermic injections of the serum every half hour beginning with ·025 cc. The quantity is doubled each time until the dose of 1 cc. is reached. If there is no reaction, 0·1 cc. may be given intravenously and followed at half hourly intervals by injection of a dose just double that of the previous one.

Treatment—Injection of adrenalin will always relieve the symptoms.

Moderate doses of ephedrine or aspirin may be tried.

Pico found that autosero therapy relieved the symptoms in a few hours. 1-2 cc. of the patient's own serum is injected intravenously at 6-8 hours' intervals for 2 or 3 doses.

As a preventive, ephedrine may be given each night and morning for a fortnight following the injection of the serum.

Calcium gluconate—Intravenous injection of 10-20 cc. of a 20% solution, supplemented by 10 cc. every 12 hours of 10% solution intramuscularly until the symptoms disappear.

SEX HORMONES and their Therapeutic Uses.

The recent discovery of the sex hormones and their actions have opened up a new field for the treatment of sexual dysfunctions, sterility etc.

Brief Physiology.

The Pituitary gland has got two parts, the anterior and the posterior. The anterior lobe produces two hormones, one gonadotropic or responsible for the regulation of the reproductive function, and the other controls the growth of the skeleton. Hyperaction of the latter causes acromegaly and hypoaction, dwarfism.

The gonadotropic hormone is presumed to have two factions one, Prolan A, is responsible for the maturation of the Graffian follicle and secretion of œstrin and the other, Prolan B, is responsible for the maturation of the corpus luteum and secretion of the luteal hormone. The gonadotropic hormone is responsible for the descent of the testes in the male.

Œstrin is mostly produced in the ovary from the follicular hormone. It produces premenstrual change in the uterus.

Theraputic Uses and Preparations.

1. GONADOTROPIC HORMONE.

PREPARATIONS.

i. Antuitrin-S. Parke Davis & Co.
ii. Pregnyl. Organon Laboratories.
iii. Prolan (Bayer)
iv. Gonan (B. D. H.)

Dose—The usual prescribed dose is 100 to 300 rat units 2-6 times a week. Usually higher doses are required, 500 rat units in each injection. Once the beneficial effects are obtained the dose can be gradually cut down.

Antutrin-S. is sold in 10 cc. rubber capped phials, each cc. containing 100 rat units.

INDICATIONS.

i. Female.

(a) Delayed puberty and sexual infantilism.

(b) Functional amenorrhœa and oilgo-menorrhœa (scanty menstruation)—Due to insufficient follicular stimulation.

Useful in primary amenorrhœa but has very little effect in secondary amenorrhœa.

(c) Functional menorrhagia, metrorrhagia, and dysmenorrhœa.

(d) Certain cases of sterility and habitual abortion.

ii. Male.

(a) Undescended testes and sexual infantilism.
(b) Aspermia and inactive spermatazoa.
(c) Frohlich's Syndrome.
(d) Impotence.

2. ŒSTRIN.

PREPARATIONS.

i. Theelin—Parke Davis & Co.
Dose—200 to 2000 international units.

Theelin is available in three forms for hypodermic injection. Theelin aqueous, containing 200 international units per cc., Theelin in oil, 1000 international units per cc. and Theelin in oil 2000 international units per cc.

There is a preparation for oral administration—Theelol, obtainable in sealed capsules (Kapseals), each containing 2000 international units. Average dose—2 Kapseals.

ii. Unden (Bayer)—one ampoule daily or every second or third day.

iii. Progynon (Scherring)—Available in three forms, Progynon-Dragees, Progynon B Oleosum, Progynon B Oleosum Forte.

iv. Thelestrin (Carnick).

v. Œstroform and Œstroform B. (B. D. H.)

vi. Menoformon and Dimenoformon.

INDICATIONS.

(*a*) Disorders of menopause—Very useful.
(*b*) Dysmenorrhœa due to under development of the uterus.
(*c*) Ovarian bleeding—Benefit is due to leutinisation of the ovary.
(*d*) Sexual frigidity, functional sterility and infantile uterus.
(*e*) Habitual abortion.
(*f*) Senile affections of the vagina—Kraurosis, pruritus, vaginitis.

3. Progestrone—The active principle of Corpus luteum hormone. Useful for

(*a*) Habitual abortion.
(*b*) Threatened abortion.
(*c*) Sterility.
(*d*) Functional menorrhagia.
(*e*) Some cases of dysmenorrhœa associated with menorrhagia.
(*f*) Pre-eclamptic toxæmia.

Except in habitual abortion and sterility it has not been found very successful.

Preparations—Progestin (B.D.H.) Proluton, Lutren.

4. Antex—Prepared from the serum of pregnant mare. It is mainly follicle stimulating.

The combination of urinary Prolan (Antuitrin-S, etc.) and Antex is suitable for control of ovarian stimulation.

Great hopes were entertained about the therapeutic efficacy of these hormonal preparations when they were first discovered, but the results have been disappointing.

SMALL POX.

Intramuscular injection of liver extract is useful.

SPRUE.

Injection of liver extract is more effective than oral administration. High content of water soluble vitamins and Castle's extrinsic factor should be supplied in the diet.

STAPHYLOCOCCAL LESIONS.

Staphylococcal toxoid and antitoxic serum are beneficial in skin infections by the organism, *e.g.*, sycosis barbæ, boils, carbuncle, stye, pustular acne, recurrent boils etc.

TACHYCARDIA.

1. WITH NORMAL RHYTHM.

1. Nervous or neurotic.

   Occurs in nervous individuals. Coarse tremors may be present in the hands and tongue. Knee jerk may be exaggerated. Patient is generally irritable.

   The cause may be very obscure and relation between neurosis and tachycardia may be very remote. It may also be produced by 'anxiety states'.

   Heart is normal but persistently rapid. Moderate exercise increases the heart rate but little, in some cases it may be slightly slowed and in others may remain unchanged.

   Treatment—Very often a few common sense and sympathetic advice will relieve the condition. Reassurance that the heart is normal will greatly relieve these patients.

2. Effort Syndrome.

On undertaking a certain amount of physical exertion, the individual soon becomes exhausted. His symptoms are tachycardia, fatigue, faintness and dyspnœa. The symptoms are very easily provoked.

The underlying cause is not cardiac. There is an inherent nervous instability which causes an abnormal reaction to nervous and physical strain. The tachycardia is due to an exaggerated sympathetic control of the heart. The patient often has a poor physique and is liable to faint.

Some of these cases later on develop into obvious hyperthyroidism.

It may be associated with an organic lesion of the heart.

3. Thyroid disease, Hyperthyroidism.

   Augmentation of the beat as well as tachycardia—The patient complains of violent heart beating.

Wasting.
Tremor—Fine and quick.
Impulsive and excited.
Other signs and symptoms of hyperthyroidism may be associated.

Treatment as for hyperthyroidism.

II. WITH ABNORMAL RHYTHM.

1. Auricular fibrillation—Very irregular rhythm.
2. Auricular flutter—Hardly any irregularity.

   Generally associated with certain amount of heart block. 2 to 1 rhythm is the most usual, so that the ventricular rate is about 120-150.

3. Paroxysmal Tachycardia.

   There is sudden, abrupt and marked acceleration of the heart beat. The cardiac rate is usually between 180 and 200.

   The impulse may arise from the auricle, ventricle or Bundle of His. It may be caused by an irritable focus.

   Duration of the attack varies very much.

   The rhythm suddenly reverts to normal and there is extraordinarily rapid recovery.

   Diagnosis between the auricular, ventricular or nodal rhythm, is of very little value for treatment.

Prognosis—Depends upon the effect of the attack on the patient, specially cyanosis, dyspnœa, enlargement of liver, œdema of the ankles etc.

Diagnosis—Suddenness and abruptness of onset and termination.

In simple paroxysmal tachycardia, the cardiac rate is not influenced by posture, or physical exertion or pressure on the vagus, unless this causes the paroxysm to cease.

Treatment.

Immediate—Many patients know by experience how to stop an attack. Holding the breath, pressing the thighs against the abdomen or tickling the throat to cause vomiting may be effective.

Carotid sinus pressure should be applied first on the right and then on the left. Pressure on the eyeball occasionally succeeds when the former is ineffective. These methods only apply to the supraventricular type and are useless in the ventricular type.

Quinidine bihydrochloride gr. 3 should be given intravenously. If this is not available 5 gr. of Quinidine Sulphate may be given by the mouth every 4 hours.

In ventricular tachycardia, quinidine is the only effective remedy.

Prophylactic—Remove any septic focus or error in the diet.

A course of quinidine 15—20 gr. daily may be effective.

TESTES, UNDESCENDED.

Treatment with gonadotropic hormone (anterior pituitary hormone) has been successful in most cases. But it may cause hypertrophy of the external genitals and therefore the treatment should be confined to bilateral cases with subnormal genital development.

Testoviron or Perandren may also be used.

TESTS for CARDIAC EFFICIENCY.

Exercise Tolerance tests. These tests though reliable are only rough guides. The response depends to a certain extent on the patient's age and physical fitness. By these one can gauge the response to exertion of the heart muscle. If the heart muscle is healthy, valve lesions may not affect the response to exertion and this indicates that the efficiency of the heart for all practical purposes is good.

There are many tests for the purpose but the practitioner should stick to one or two so that he will be able to form his own standard in a short time.

Mounting on a stool, or running a certain distance and back are the simplest and most convenient tests. Mounting stairs will be better for those on the town.

Two points have to be observed.

1. The acceleration of the heart above the resting rate caused by the exercise, and the time taken for the heart to return to its original rate.

2. The rise in the rate of respiration produced by the exercise and the time taken to return to its original rate.

A healthy young man in good condition should have a heart rate when standing of about 76. If he mounts on an ordinary chair 5 times in 15 seconds, his heart rate may rise to about 100, and will have settled again in half a minute at most.

In a healthy young individual the pulse should not rise more than 30 beats a minute on climbing briskly 40 steps or running at moderate speed 40 yards and back. It should be back at resting rate within half to two minutes.

TETANUS.

TREATMENT.

If available the following doses of serum should be started at once.

Day	Subcutaneous	Intramuscular	Intraspinal
1		8000	16000
2		8000	16000
3		4000	8000
4		4000	8000
5	2000		
7	2000		
9	2000		

Apart from the specific antiserum therapy, the following will help.

Sedatives.

Luminal 3-5 gr. repeated every 3-6 hours. If it cannot be swallowed, sodium luminal gr. 4 can be injected hypodermically in 2 cc. of water.

Chloral Hydrate 30-45 gr. in olive oil or water can be given by the rectum.

Light chloroform anæthesia is useful specially for lumbar puncture.

Magnesium Sulphate. Subcutaneous injection, 2 cc. of a 25% solution for each 20 pounds of body weight, every 4 hours.

Intraspinal injection of Magnesium Sulphate.

First injection, 1 cc. of 25% solution for each 20 pounds of body weight.

Second injection, 0·8 cc. for each 20 pounds.

Children—Only 0·5 cc. for each 20 pounds.

To counteract the depressant action of magnesium sulphate on the respiratory centre, inject calcium chloride in normal saline (2·5 cc.) intravenously. The action is almost immediate. Give the intravenous injection slowly.

Avertin—Rectally; 0·07 to 0·1 cc. per kilo. of body weight. The required amount is mixed with distilled water at 40° C. to make a 2½-3% solution and given rectally.

It should be repeated when the spasms return. Severe spasms need bigger dose.

Paraldehyde per rectum is useful—1 dr. per stone of body weight, maximum of 8 dr., in 8 oz. of olive oil.

TUBERCULOSIS.

Successful treatment of pulmonary tuberculosis depends on early diagnosis, and the rural practitioner must be able to do this. It is he who sees the patients in the early stages and if adequate steps are not taken immediately, not only will it become incurable in a short time, but will also be a source of infection. One thing which I would like to impress upon you is that the average person suffering from pulmonary tuberculosis does not die very quickly, but he hangs on, unable to earn his own living, depending on other relations. Therefore he is not only a menace to the society, but burden to his relatives and a source of great economic loss. It must be realised that by the time one can find actual physical signs, the disease is usually beyond cure by the ordinary methods at the disposal of the rural practioner, and they have not got X-ray and other diagnostic aids of which he read in the books. The following signs generally point early tuberculosis; it must be remembered that these signs are also present in hundreds of other diseases. But the presence of most of these signs and absence of any other obvious disease, point to tuberculosis.

The common causes of fever in these parts are malaria, typhoid (which is more or less obvious), influenza, pyelitis (B. Coli infection) and hepatitis.

Dengue and sand fly fevers are common and the diagnosis is easy. Pernicious anæmia by itself may cause fever and when associated with enlarged spleen, is often misdiagnosed as malarial cachexia.

Secondary syphilis may cause slow fever as well.

Fever which does not show any improvement with adequate dose of quinine (20-30 gr. a day) may be presumed as not malaria.

B. Coli infection is more common in women and children. There is usually pain in the loin, acid urine and leucocytosis. The fever often improves if the urine is kept alkaline.

Hepatitis. History of dysentery. Pain in the liver region or right shoulder and the liver does not move freely with respiration. To demonstrate this (without X-ray), percuss out the upper limit of the liver. Keep the finger at the upper border of the dullness and ask the patient to take a deep breath and hold it. If the liver is freely mobile, the upper limit of the dullness will be lower than before.

Symotoms pointing to **Early Pulmonary Tuberculosis.**

1. A constant succession of colds should never be lightly regarded. Cough is almost always present on rising in the morning and after meals.
2. Tubercular toxin produces relaxation of the vessels (vasodilatation) and nearly all the early or pretubercular symptoms are due to this.
   - (*a*) Tachycardia at rest as well as effort syndrome, *i.e.*, the time taken by the heart to return to normal rate after moderate exercise (normally 2 minutes) is increased.
   - (*b*) Albuminuria—Caused by passive congestion of the kidneys. There is no actual renal damage.
   - (*c*) Dyspepsia of asthenic type, *i.e.*, associated with hypochlorhydria. It may be associated with either constipation or diarrhœa ; former is more common,
   - (*d*) Mental hebetude, lethargy, and indolence. Children are backward in learning lessons.
   - (*e*) Muscular debility and loss of energy. Easily tried.
   - (*f*) Suppression of menstruation.
3. Pyrexia. Four hourly temperature chart is essential and the thermometer should be kept in for 5 minutes otherwise fever may be easily missed.

4. Mental condition of optimism. This often leads the patient to minimise the seriousness of his illness and disregard the doctor's instructions.
5. Anæmia. Face is thin and shows definite pallor.
6. Exalted sexual appetite.
7. Hoarseness or aphonia without any definite cause.
8. Loss of weight.
9. Ulnar reflex. It is not pathognomonic but a useful diagnostic aid. The forearm is kept in a flexed position with all the muscles relaxed. Draw a pin along the whole length of the ulnar side from elbow to the wrist, the Abductor minimi digiti quinti will contract and cause wrinkling of the hypothenar eminence.
10. Hæmoptysis. Every case of hæmoptysis unless there is an obvious source as from gum or throat, must be suspected.

Outline of treatment.

A sensible patient must always be told that he is suffering from the disease and it is essential for him to follow the instructions in every detail for his cure as well as for the prevention of infection of others in the family.

1. Rest—Absolute, until the temperature remains normal for about a week and then graduated exercise just short of fatigue and dyspnœa and production of fever.
2. Fresh air.
3. Improve digestion.
4. Diet.

Fats in all forms should be encouraged.

Milk is good.

During the febrile period, the diet should be as generous as consistent with the patient's power of digestion.

Gerson advocates salt free diet and has reported very good results. He gives fresh uncooked food with full vitamin content and 2 oz. of phosphorated cod liver oil daily. The proportion of food recommended by him. Protein—90 Gm., fat—160 Gm., and Carbohydrate —220 Gm.

It is suggessed that carbohydrate favours the spread of tuberculosis, while protein lessens the sensitivity and fat raises the resistance.

4. Improve digestion.

It may be necessary to stimulate the appetite in certain patients. The following is a good mixture and should be given half an hour before meals.

Liq. Strychnine Hydrochlor.		m. 3
Glycerine		m. 30
Acid Nitrohydrochlor. Dil.		m. 20
Inf. Gentian Co.	ad	oz. 1

Food should be made to suit the patient's appetite. For the patient who is doing well, ordinary food with extra fat is good, but sometimes the addition of something with a strong taste as pickles, chutneys, onions, mustard, will help a patient with poor appetite.

5. Cough should receive the usual treatment.

Paroxysms of cough which is due to difficult in bringing up sputum will often be relieved by a simple mixture containing sodium bicarbonate gr. 15, sodium chloride gr. 5 with a little spirit chloroform and Aq. anisi.

Other drugs may be required to loosen the sputum, *e.g.*, ammon chloride or potassi. iodide. Sometimes a linctus will relieve an irritating cough which prevents sleep. Syrup Citronin (Parke Davis) will usually relieve an irritating cough.

6. Night sweats.

A tumbler of milk before going to bed will often help.

7, Drugs.

(*a*) Calcium—It may be given intramuscularly as calcium chloride, calcium gluconate, collosol calcium or osteocalcium with vitamin D (Glaxo Lab.).
Calcium gloconate is the best absorbed and tolerated of all the salts. Chocolate coated tablets (Sandoz) containing 25-50 gr. may be given 3 times a day. An equivalent dose may be given by the mouth in the form of a syrup.

A new preparation of calcium glucono-galactogluconate corresponding to 10% and 20% solution of the gluconate (Calcium Sandoz) has been found to be extremely valuable and more suitable for both intramuscular and intravenous injections, daily in acute cases, and every third day in subacute cases.

Calcium chloride is most effective when given by intravenous injection.

Calcium lactate is not so effective and is frequently given in insufficient dosage.

Parathyroid will assist calcium absorption. $\frac{1}{10}$ gr. may be given three times a day or Collip's Parathormone may be used.

(*b*) Vitamin A and D must be provided.

(*c*) Gold Therapy.

Sanocrysin—More useful in the nonfibrotic type.

It must be realised that it is only an adjuvant in the treatment of the disease, *i.e.*, it aids other methods of treatment but it is not a cure and is never more than a part of the treatment.

It is best for those types of patients who have lost all symptoms but are still expectorating sputum containing tubercle bacillus.

It does not seem to prevent relapse but in many cases will check an exaccerbation of the disease and bring about a period of temporary arrest.

Those who are failing to improve under routine treatment, in many cases will show remarkable improvement with sanocrysin.

It can also be used in conjunction with other methods of treatment as artificial pneumothorax, phrenic evulsion and thoracoplasty.

Dose.

It is given intravenously. The initial dose is 0·01 Gm. After 3 days 0·25 Gm. Then at weekly intervals 0·5, 0·75, and 1 Gm.

It is dissolved in 2 cc. of distilled water for all doses under 0·3 Gm. and in 5 cc. for over 0·3 Gm.

If reaction occurs after any of the injections, wait until all the effects have passed off and then repeat the same dose.

When the dose of 1 Gm. is reached, it is repeated 3 or 4 times.

Solganol B.

This is another preparation of gold and is injected intramuscularly in the upper gluteal region. The

site of injection must be changed each time. It is started with 0·01 Gm. and the dose is gradually increased.

Sanocrysin is better than Solganol.

Reactions after injection of gold preparations.

Exfoliative dermatitis may occur.

If the face or neck is exposed to bright sunlight after a course of sanocrysin, the skin will become permanently darker.

8. Graduated exerise.

When the temperature has been normal for sometime, the patient should take some exercise. Beginning very mildly and gradually increasing it. The amount of exercise should be just short of causing fatigue and should be guided by the temperature ; *i.e.*, the maximum exertion that can be undertaken which does not cause fever.

TYPHOID FEVER.

MANAGEMENT.

1. Isolation of all articles used for the patient.
2. Soiled linen etc. should first be soaked in cresol solution and then sent for wash.
3. Excreta should be treated with cresol solution and then burnt.
4. Diet.

The introduction of full diet in the treatment of typhoid fever is the greatest contribution of all times towards the control of the malady. The severity of the symptoms are greatly lessened. Extreme tympanitis is unusual. Delirium and stupor are modified. Bed sores are very seldom seen. Very little anæmia and the patient leaves the bed very little wasted and thus the convalescence is tremendously reduced.

A normal individual at rest requires 1500 calories to maintain the body metabolism. The metabolic rate is increased in fever, so 2500 to 3000 calories should be provided to prevent undue wasting.

Foods when they reach the lower part of the small intestine, the ulcerated area, unless they are very hard or indigestible, are always in a fluid state, so the following foods are permissible.

Toast, cream (top 4″ from a quart bottle of milk, which has stood for 6 hours), butter, lactose with milk, sugar, coffee, tea, eggs (2 a day), boiled and mashed potatoes, baked apple (medium sized one a day, carefully cored and seeded), cream cracker biscuits, boiled rice, milk puddings, cocoa, Robinson's barley, various kinds of soups, 'Murmura' (muri), 'khoi', 'suji' boiled with milk, honey, oranges, bananas, good quality (nonfibrous) sweet mangoes.

Some people cannot tolerate milk in any form and amount and most get disgusted with continued milk. For them soups, coffee, tea would be better.

Choose the food to suit the taste and inclination of the patient. Some people hanker after salty foods and they should get salty soups, mashed potatoes with salt, 'muri' with a pinch of salt etc.

5. Care of bowels.

Most patients get a dose of calomel in the beginning of the disease. This cannot do any harm and some people recommend purgative in the early stages of the disease, before ulceration has taken place.

On the full diet treatment, glycerine or better still a normal saline enema, every other day will ensure regular evacuation of the bowels.

Diarrhœa—It is seldom prominent on the full feeding regimen and yields to careful adjustment of cream and lactose portions of the diet. When it persists, tannins or Bismuth has to be given.

Tannin—Tannalbin, Acetyl tannic acid (Tannigen).

Bismuth.

Bismuth Subcarbonate	... Oz.	1
Glycerine	... Oz.	½
Syrup Ginger	... Oz.	4

One teaspoonful, every 2 hours for ten doses.

Tympanitis.

Preventive—Enema as described above.

Do not give any aerated waters.

Curative—Turpentine stupes, or enema.

Never give pituitrin or any other pristaltic stimulant.

6. Care of mouth and skin.

Mouth cleaned with alkaline aromatic solution and then painted with boroglycerine every morning.

The skin is daily cleaned by sponging.

Back and bony points exposed to pressure are cleaned with spirit and powdered.

7. Control of temperature.

   Hydrotherapy.

   Sponging with tepid water and the temperature kept under 102°

8. Stimulants—Alcohol ½—1 oz. T. D. S.

   Other cardiac stimulants may be used if and when necessary, but pituitrin must be avoided.

9. During convalescence it is better to keep the urine alkaline with citrates to prevent B. Coli infection.

VACCINATION.

The operation of vaccination as performed by most vaccinators and doctors should now be given up.

Primary Vaccination—Should be done between the ages of 2-6 months.

Method—It consists of a single superficial scratch with a sterile needle. It should not be more than one-fourth of an inch long, and should be merely through the epidermis in the long axis of the limb. This is made through a drop of vaccine or the vaccine may be applied afterwards. It should not draw blood. The vaccine should then be rubbed into the scratch with the side of the needle.

Revaccination.

When maximal protection against small-pox is desired, the number of scratches may be increased, but never more than four.

In no circumstances should the vaccinated area be cross scarified or cross hatched.

VAGINITIS.

Trichomonas.

This is a common cause of leucorrhœa.

Symptoms—Leucorrhœa, irritation, soreness and dyspareunia. Discharge is thin and of the nature of watery pus. Vaginitis is most intense in the posterior fornix.

Treatment—Devegan two tablets inserted daily high up in the vagina till the discharge is lessened, and then one tablet a day for six weeks.

Douches of sodium bicarbonate to wash away the debris.

SENILE—Vaginal suppositories of œstrogenic substances 1000 to 2500 units followed by lactic acid douche.

Preparations.

Kolpin—Vaginal suppository combining œstrin with lactic acid.

Œstroglandol—an ointment (Roche).
Emmenin—(Extracted from placenta).

VARICOSE VEIN.

Injection Treatment.

INDICATIONS.

1. Varices limited to the lesser saphenous vein.
2. In the case of greater saphenous vein, if the vein is not widened and the Trendelenberg test is negative.

In case of ulceration inject away from it.

CONTRAINDICATIONS.

1. Great widening of the saphenous vein.
2. Obliteration of the deep vein.
3. Presence of some systemic disease, *e.g.*, nephritis, heart disease, Grave's disease, recent thrombophlebitis.
4. Enlarged veins of pregnancy.

SOLUTION FOR INJECTION.

1. Quinine urethane, best.
2. Sodium salicylate 20%-30%, cheap and effective. Best for hospital use.
3. Sodium Morrhuate.

TECHNIQUE OF INJECTION.

Patient sits on a table with the leg hanging down.
Clean the site for injection with spirit.

Take two syringes, one 10 cc. or 5 cc. and the other 2 cc. and a needle which fits on to both the syringes.

Do not use any tourniquet.

Puncture the vein with the needle attached to the bigger syringe, and draw out blood to empty the vein.

Ask an assistant to keep slight pressure on the vein on the distal side, so that it does not fill up too quickly.

Remove the syringe from the needle and fix the 2 cc. syringe, already filled with the solution, to the needle and inject into the vein.

Withdraw the needle and carry out the same process at another site.

The number of injections required will depend upon the amount and degree of varicosity.

VARICOSE ULCER.

Treatment by application of compression bandage or elasto plast is the best.

Technique.

1. The uppermost veins are injected from above downward.
2. The leg is then bandaged with adhesive bandage, preferably elastic, firmly and evenly over a longitudinal strip on both sides. The tightness of the bandage being proportional to the swelling and induration. The almost invariable cause of failure is looseness of the bandage This can only be attained by using elastic bandage (elastoplast).
3. No treatment of any kind is applied to the ulcer, eczema or plhebitis.
4. If the ulcer is very painful aspirin powder may be blown on it and the patient given a hypnotic for a few nights.
5. The discharge if it comes through, is washed out.
6. Subsequent treatment will depend upon the size and location of the ulcer. Movements will loosen the bandage. Copious discharge will necessitate frequent changing. Disappearance of the œdema will require reapplication.
7. Upon each removal of the bandage the veins are injected again.

VENOM SNAKE.

Cobra venom (Cobra toxyl, Bathgate Calcutta)

Uses—Diminishes pain and retards putrefaction in inoperable malignant growths.

Has been used for treatment of epilepsy.

Russel's Viper venom (Stypven, B. W. & Co.), see also Hæmophilia.

Uses—Hæmophilia.

Intractable dental hæmorrhage.

Moccasin venom (Moccasin, Lederle)

Use—Idiopathic hæmorrhages. It decreases capillary permeability.

VITAMINS.

These are substances which are present in various natural foods and are essential for the maintenance of normal health and growth.

Vitamin A.

It is fat soluble.

Natural Sources.

Cod and halibut liver oils.

Indian foods with a fairly good amount of the vitamin Butter, cabbage, carrots, cream, eggs, green beans, milk, pea, pine-apple, spinach (palak), sweet potatoes, tomatoes, walnut, wheat bran, embryo of green vegetables.

It is absent in vegetable oils.

Deficiency of the vitamin causes

1. Increased liability to infection.
2. Xerophthalmia. Night blindness.
3. Retardation of growth in infants and children.

Concentrated Vitamin A is useful in

1. Infection of the respiratory system.
2. Puerperal sepsis.

Commercial Preparations—Adexolin, Advita, Abidol,

Haldiol (B. C. P. W.), Essogen and Avoleum (B. D. H.). The last two contain only vitamin A without any vitamin D, in concentrated form and are suitable for prolonged administration. Prolonged administration of vitamin D is contra-indicated.

Ointments and oily preparations containing concentrated vitamin A are useful for dressing sores and ulcers and in cases of burn.

Preparations—Cod liver oil ointment (Allen & Hanbury), Vulnovitan ointment and oil (Gedeon, Richter). Cod liver oil itself may be used, but the smell is rather prohibitive.

Vitamin B.

It is water soluble.

It is now believed that it is a very complex substance and consists of five separate factors. B_1, B_2, B_3, B_4, B_5.

Natural Sources.

Raw cabbage, spinach, tomatoes, nuts, seeds, lettuce, celery, wheat bran, wheat grain, white bean, green bean, milk, cream, milk cheese, cauliflower, apple, buttermilk.

Deficieny of Vitamin B causes

1. Peripheral neuritis.
2. B_2 is responsible for pellagra.
3. Some of the Vitamin B complex is responsible for a certain type of anæmia.

Commercial Preparations.—Marmite, Beemax, Pulv. Vitamin B_1, Abidol, Yeast, Vitys (B. C. P. W.)

Vitamin C.

It is water soluble.

Natural Sources.

Apple, grape fruit, lemon juice, milk (fresh), orange juice, peaches, peas (fresh), potatoes, pine-apple, raspberries, raw cabbage, spinach, tomatoes, turnip, wheat bran and grain.

It is identical with hexuronic acid, and is called ascorbic acid by some.

Deficiency of the vitamin causes scurvy.

Commercial preparation—'Roche' Vitamin C.

Vitamin D.

It is fat soluble and essential for the normal absorption and utilisation of calcium and phosphorus.

It is naturally produced by the action of sun's rays on ergosterol which is present in the skin.

Other sources—Cod liver oil, halibut liver oil.

Deficiency of Vitamin D causes

1. Rickets.
2. Softening of the bones in pregnancy which may lead to osteomalacia.
3. Deficient calcification of the bones.
4. Tetany.

Commercial preparations—Adexolin. Advita, Abidol, Radiomalt, Irradiated Ergosterol, Ostilin, Rayneol, Raymalt. Crooke's Super D oil etc.

Vitamin E.

It is fat soluble.

Natural Sources.

Whole meal bread, olive oil, and green vegetables specially lettuce.

Deficiency of Vitamin E causes.

1. Sterility.
2. Degeneration of seminiferous tubules in the male.
3. Habitual abortion in the female.

Commercial preparation—Fertilol (wheat germ oil). Collosol wheat germ oil (Crooke's).

WHOOPING COUGH.

Prophylaxis—Vaccine may be used for protecting the contacts.

Treatment:

Keep the child out of doors as much as possible.

Constant vomiting generally results in malnutrition.

So reduce the quantity of food at each feed and give the feeds more frequently.

Sedatives.

Chloral, sodium bromide and belladonna may help.
Gold tribromide ($\frac{1}{20}$ to $\frac{1}{10}$ gr.), given in solution three times a day, has been recommended.

In severe cases, when the paroxysms need be controlled antipyrine is useful. 1 gr. every three hours for an infant of six months. Child of 2 years of age, 2 gr. every 4 to 6 hours may be given. The dose is gradually increased. Children tolerate this drug well.

Abdominal binder.

General improvement and specially reduction of the vomiting spells are effected if an abdominal belt, preferably elastic, is applied. It has proved of great help.

Ether injections.

Intramuscular injections of commercial ether proved useful in some. Two injections are given a day for the first four days and one on the fifth. First day 0.5 cc., second day 1 cc., third day 1·5 cc., fourth day 2 cc., at each injection and 2 cc. on the fifth day.

Intramuscular injections of mother's blood.

If the child is less than $2\frac{1}{2}$ years old, two intragluteal injections of maternal blood, 5-10 cc. each may be given.

Vaccines may be tried. A detoxicated vaccine (Genatosan) is also available.

Dissolved vaccine (G.L.L.)—it is claimed to be very effective if given before the eighteenth day of the disease.

Recently it has been found that vaccines are not harmless.

Serum—Convalescent serum, 20-40. cc are beneficient if given in the catarrhal stages.

Appendix I

SCHOOL CHILDREN, EXAMINATION OF

The examination should take place in the school. The teacher must be present at the time of the examination and parents should be encouraged to be present at the medical examination of their children. Routine and thorough examination of all children should be carried out preferably twice a year and this should include the respiratory, circulatory, nervous, digestive, muscular and locomotive systems and the special senses, specially the eyesight.

In addition to the above routine examination, examination of certain children selected at these examinations, and those referred to the doctor by the teachers, or reported by the parents, must be examined very thoroughly, and at more frequent intervals.

1. Minor Ailments.

Children suffering from minor ailments will be advised to attend the dispensary.

2. Dental Inspection.

Teeth and gum of all children must be examined at least twice a year and parents advised about treatment. The good Indian habit of using "*Dantan*" or stick for cleaning the teeth should be insisted. It is handy, inexpensive, gives very good results and does not injure the gum. It is far better than using a dirty and unkempt tooth brush. Moreover one has to bite it hard before using it and that makes the roots strong. It also massages the gum much more effectively than a tooth brush ever does. They should also be advised to massage the gums every morning with the fingers. It should be insisted that the children must clean their mouth thoroughly by gargling with water after every meal.

3. Eye and Defective vision.

Any disease of the eye must be promptly and thoroughly treated. It should be impressed upon the boys and girls that trachoma is an infectious disease and they must not use each others handkerchiefs or towels. Eye sight should be thoroughly tested if the scholar complains of headache or holds the book too close to his eyes.

4. Ear Nose and Throat.

These should be examined and if any disease or defect found, must be properly treated or the parents advised to have them treated. Any obstruction to natural nasal breathing must be remedied.

5. Chest.

The child should be shown how to carry out breathing exercises and expansion of the chest and the drill master should see that exercises are properly carried out in the school drill.

6. **The Spine** of every school child should be carefully examined and if scoliosis, kyphosis or any other deformity is found, suitable remedial exercises should be advised. Deformity in young children is usually caused by defective posture, either their desk is too low, or the stool has not got proper support for the back or the eye sight is defective and the child has to stoop.

7. Attention should also be paid to the child's **foot.** Any deformity or defect found must be corrected. The boots should be more or less straight. *Chaplis* will not cause any deformity of the foot and will keep the feet well ventilated.

8. The muscular system should be seen and advice given how to develop them properly by exercises and massage.

9. Children are usually the store-house of malarial parasites. Chronic malaria or Kala-Azar is the chief reason of enlarged spleen. If malaria is suspected to be the cause, a course of atebrin and plasmoquin should be given.

10. Backward Children.

There is usually some reason for this. Some of them are physically defective and others mentally. The cause of physical defect is either under-nutrition or some incipient disease. Proper diet and treatment of any disease found should be carried out.

Mentally defective children. Their capacity is less than the average and they will require special attention.

11. Children about puberty should be given some common sense advice about sex matters.

Appendix II

FOOD VALUES

Proteins, Fats and Carbohydrates in grammes per ounce, Caloric values and of Common Food Materials used in India (Chopra).

Food-Stuffs.	Protein.	Fat.	Carbo-hydrate.	Calories.
Milk and Milk Products.				
Butter	0.30	23.10	0.00	216
Butter milk, unsweetened (ghol)	0.85	0.14	1.36	10
Cheese	7.35	8.88	0.00	111
Cream	0.70	5.24	1.27	55
Clarified butter (ghee)	0.00	24.00	0.00	223
Curd, unsweetened (dahi)	1.40	1.00	0.80	18
Curd, fresh milk (chhana)	6.30	5.30	0.10	76
Mellin's Food	3.20	0.10	22.70	107
Milk buffalo's	1.35	2.18	1.24	30
,, cow's pure	0.91	1.02	1.36	18
,, condensed	2.49	2.35	15.31	92
,, goat's	1.21	1.13	1.21	20
,, human	0.42	1.50	0.75	18
,, skimmed	0.96	0.08	1.44	10
,, whey	0.30	tr.	1.40	8
Meat and Fish.				
Bacon	5.00	15.00	0	155
Beef steak	5.29	5.18	0	70
Brain	2.90	2.77	...	37
Chicken	6.74	0.38	0	30
Duck	5.80	2.94	...	50
Fowl	5.50	4.60	0	65
Goat's meat	7.20	0.75	...	36
Goose	4.60	10.20	0	113
Ham (medium fat)	4.30	10.80	0	118
Kidney	4.54	1.36	0.06	31
Liver	6.11	1.70	0.76	43
Mutton (fat)	4.00	9.50	0	105
Pigeon	6.25	1.86	...	42

APPENDIX II (Contd.)

Food-Stuffs.	Protein.	Fat.	Carbo-hydrate.	Calories.
Mutton (lean)	5.97	1.98	...	42
Pork, loin	6.05	3.14	...	53
Tongue	4.41	5.43	...	67
Turkey	5.90	6.50	0	85
Fish (fresh water)	5.50	1.15	...	32
,, (fat)	5.32	3.70	...	55
,, (lean)	5.15	0.20	...	22
Bhetki, cock-up	4.60	1.20	0	30
Hilsa, sable-fish	4.20	2.60	0	42
Koi, climbing-perch	6.00	0.10	0	26
Magur, cat fish	5.50	0.10	0	24
Mango fish	4.70	1.20	0	31
Mrigail, carp	5.10	0.10	0	22
Parsheh, mullet	4.40	1.80	0	35
Rue, rohu, carp	4.60	2.10	0	39
Singi	6.20	0.80	0	33
Tangra, cat-fish	4.60	0.10	0	20
Shell Fish.				
Lobster	4.59	0.50	0.11	24
Prawn	4.80	0.10	0.02	21
Shrimp	7.11	0.28	0.05	32
Eggs.				
Eggs (hen) whole, fresh	3.79	2.97	...	42
,, ,, white fresh	3.40	tr.	0	14
,, ,, yolk ,,	4.20	9.40	0	105
,, (duck) whole	3.30	4.10	0	52
,, ,, white	3.10	tr.	0	13
,, ,, yolk	3.80	10.20	0	111
Animal Fats.				
Cod-liver oil	...	28.00	...	252
Fat (mutton or beef)	0.34	26.40	...	239
Fish-liver oil	...	28.00	...	252
Lard	...	26.80	...	241
Vegetable oils.				
Cocoanut oil	...	28.00	...	252
Cocogem	...	28.00	...	252
Cotton-seed oil	...	28.00	...	252
Gingelly oil	...	28.00	...	252
Ground-nut oil	...	28.00	...	252

APPENDIX II (Contd)

Food-Stuffs.	Protein.	Fat.	Carbo-hydrate.	Calories.
Linseed oil	...	28.00	...	252
Margarine	...	23.80	...	214
Mustard oil	...	28.00	...	252
Olive oil	...	28.00	...	252
Lentils.				
Broad bean (fresh)	2.66	0.11	6.45	37
Dal (average)	6.50	0.99	16.20	100
,, Arhar	4.80	0.70	15.80	91
,, chana, chhola	6.70	1.20	17.00	108
,, khessari	6.80	0.70	14.50	94
,, krishna mung	6.30	0.40	15.80	94
,, matar	6.60	0.60	16.10	98
,, mussoor	7.10	0.40	16.60	101
,, sona mung	7.20	0.80	15.40	100
,, soup (average)	0.80	tr.	1.00	8
,, (powdered) besan	6.40	0.90	16.50	102
Gram, whole (chana, chhola)	6.20	1.20	16.70	105
,, powdered (sattu)	7.60	0.60	17.10	107
Matar, Kabli	6.20	0.60	15.00	93
Peas (dried)	1.85	0.17	4.75	28
Soya bean	9.60	4.70	9.50	119
Vegetables (including tubers, roots, etc.)				
Artichoke (hathichuk)	0.78	0.06	5.00	24
Asparagus (soot moolee)	0.68	1.00	0.66	14
Beans, broad (seem)	2.64	0.11	5.45	37
,, French (chhota seem)	0.q4	0.03	1.36	8
,, string (barbati)	1.00	0.40	0.80	11
Beetroot (chukander)	0.34	0.03	1.75	9
Brinjal (baigun)	0.34	0.09	1.44	8
Broccoli (chota phool kobi)	0.30	tr.	0.90	5
Brussel sprouts (choke kohi)	0.92	0.06	1.61	11
Cabbage (Banda kobi)	0.39	0.03	1.27	7
Carrot (gajar)	0.25	0.03	2.25	10
Cauliflower (phool kobi)	0.54	0.06	167	9
Celery (shalarry)	0.17	0.03	1.07	5
Endive (kasni leaves)	tr.	tr.	0.70	3
Fleshy roots (taro)	0.50	0.06	6.30	28
Garlick (rasoon)	1.92	0.03	7.90	40

APPENDIX II (Contd)

Food Stuffs.	Protein.	Fat.	Carbo-hydrate.	Calories.
Gourd, bitter, large (karela)	tr.	tr.	tr.	—
,, ,, small (uchchey)	tr.	tr.	tr.	—
,, bottle (kaddu, lau)	0.10	0.70	0.20	8
,, club (loofa, dhundul)	0.20	tr.	0.60	4
,, snake (chichinga)	0.10	tr.	0.40	2
,, sponge (jhinga)	tr.	tr.	tr.	—
,, white (chaulkumra)	0.50	tr.	0.30	4
Green vegetables (average)	0.20	tr.	1.00	5
Jack fruit, unripe (inchar)	2.40	0.30	4.60	32
,, ,, seeds (kantal bij)	3.70	0.80	8.80	59
Knol-khol (ole kobi)	0.26	0.16	3.30	16
Lady's finger (bhindee, dhanrose)	0.57	0.33	1.70	12
Leek (Bilati piaj)	0.71	0.03	2.63	14
Lettuce, green (salad)	0.31	0.06	0.54	4
Malabar night shade (puin sak)	tr.	tr.	0.10	—
Mango	0.20	tr.	1.00	5
Mankachu	0.50	0.40	3.40	20
Mushrooms	1.00	0.10	2.00	13
Ole, jungli-suran	0.60	0.80	3.60	25
Onion (piaj)	0.37	0.03	3.06	14
Papaya (green)	0.20	tr.	0.10	2
Parsnips	0.48	0.14	5.97	27
Patol, Palbol	0.21	—	0.37	2
Peas, green (kalaisuti)	2.00	1.00	4.50	40
Plantain flower (mocha)	tr.	tr.	0.70	3
,, green (kancha-kela)	0.40	0.70	4.50	27
Potato	0.70	0.04	8.15	36
,, (boiled)	0.70	tr.	5.80	27
,, sweet (ranga-alu)	0.20	0.90	6.00	34
,, (Shank-alu) white	0.40	tr.	6.20	27
Pumpkin (Belati koomra)	0.28	0.03	1.47	7
Radishes (moola)	0.28	0.03	0.96	5
Rhuburb	0.17	0.02	10.03	5
Spinach (palong sak)	0.51	0.06	0.82	6
Thor (pith of plantain stem)	—	tr.	0.70	3
Tomato	0.20	0.03	1.27	6
Turnip (shalgam)	0.34	0.03	1.25	7
,, tops	1.19	0.17	1.78	13
Yam (kachu)	0.51	0.06	6.31	28

APPENDIX II (Contd.)

Food-Stuffs.	Protein.	Fat.	Carbo-hydrate.	Calories.
Cereals and Cereal Products.				
Arrowroot	0.20	tr.	23.60	98
Bajri or ragi	2.78	0.46	23.35	109
Barley	2.97	0.62	20.60	100
Bread (white)	2.00	0.33	14.80	70
,, (brown)	1.50	0.20	13.70	65
Beaten rice (chura, chira)	1.70	tr.	21.10	94
Cambu, bulrush millet	3.64	1.38	19.40	100
Cornflower	1.80	1.20	20.00	101
Fried paddy (khoi)	1.90	0.70	20.70	99
Jaur atta	2.30	0.60	20.40	99
Macaroni	3.50	0.20	20.50	101
Maize (yellow)	2.13	0.48	20.80	96
Oatmeal	3.37	2.43	19.81	115
Puffed rice (muri)	2.10	0.30	19.40	90
Rice atap	2.10	0.20	24.00	108
,, parbiled	1.84	0.22	26.11	114
,, polished	1.79	0.13	26.09	113
,, washed	1.62	0.15	26.34	113
,, unpolished	2.30	0.085	22.30	99
Sago	2.10	tr	22.00	99
Semolina (sooji)	4.20	0 68	14.20	80
Tpioca	tr.	tr.	24.90	102
Vermicelli	3.00	0.50	20.40	100
Wheat-flour, white (maida)	3.14	0.37	21.54	102
,, ,, wholemeal (atta)	3.90	0.54	20.35	102
,, gluten	6.3	tr.	0.40	28
Special foods (Bakery products).				
Akoll biscuits (Huntley & Palmers, London)	15.20	8.00	1.70	141
Biscuit (average) H. & P.	4.00	0.50	21.00	107
Biscuit (digestive)	2.20	4.60	18.30	127
Force	3.00	0.30	20.70	100
Grape-nuts	3.40	0.20	22.70	110
Shredded wheat	3.00	0.00	21.00	99
Alpha No. 1—diabetic water	13.70	9.50	1.30	160
Almond biscuit	9.60	13.80	1.70	174
Chocolate biscuit (Casoil	6.50	14.60	4.20	180
Starchless ginger biscuit	7.70	16.10	2.00	190

APPENDIX II (Contd.)

Food-Stuffs.	Protein.	Fat.	Carbo-hydrate.	Calories.
Gluten butter biscuit G.	11.40	9.40	4.70	154
Walnut biscuit	5.90	16.20	3.40	189
Nuts and Seeds.				
Almond (kagji badam)	5.26	15.96	4.30	182
Brazil nut	5.10	20.00	2.10	216
Chestnut	1.90	16.20	12.60	210
Groundnut (Munghphali, cheena badam)	7.30	10.92	6.90	155
Linseed	6.40	9.50	7.60	142
Pistachio (pesta)	6.60	16.20	480	198
Walnut (akhrot)	3.85	19.92	3.96	211
Other nuts	5.00	16.50	3.60	183
Fresh Fruits				
Apple	0.09	0.06	3.54	15
Banana, plantain	0.45	0.03	2.26	11
Bael	0.20	0.20	4.50	21
Blackberry (kala jam)	0.40	0.20	1.00	8
Cocoanut water	0.40	...	0.70	5
Cucumber (khira, sasha)	0.17	0.02	0.57	3
Cocoanut kernel (narkel)	1.61	14.31	7.90	167
Grape	0.17	0.03	3.93	17
Guava	0.37	0.20	2·27	12
Jack-fruit (kantal)	0.30	0-10	5.30	24
Lemon	0.14	0.14	0.88	5
Lichee	0.84	0.07	1.90	12
Mango (ordinary)	0·04	0.22	5.20	23
,, Bombai or langrah	0 50	0.20	5.10	26
Melon (footee)	0.40	...	1 10	6
,, musk (kharbuja)	0.60	...	1.90	10
,, water (tarbuj)	0.11	0.06	1.90	9
Orange	0.25	0.03	2.69	12
Papaya	0.16	...	0.10	1
Peach	0.19	0.03	2.66	12
Pear	0.09	0.03	2.29	10
Pineapple (anaras)	0.11	0.09	2 75	12
Plum	...	...	4.10	17
Pomegranate (bedana)	0.30	tr.	2.19	10
,, (dalim)	0.18	...	0.19	2
Pamelo (batabi nimbu)	0.20	...	2.10	10

APPENDIX II (Contd.)

Food-Stuffs.	Protein.	Fat.	Carbo-hydrate.	Calories.
Raspberry	0.47	0.28	3.58	18
Roseberry (golab jam)	.40	...	1.40	7
Strawberry	0.20	0.10	2.30	11
Sugarcane	0.42	0.16	6.20	28
Water nut (Singara, panifal)	0.30	tr.	5.70	24
Dried Fruits.				
Apricot (khobani)	1.57	0.09	14.04	63
Currant	0.48	0.09	11.89	50
Date	0.45	0.03	19.73	81
Fig	0.56	0.14	15.99	67
Prune	0.85	0.09	11.43	50
Raisin	0.62	0.09	17.32	73
Tamarind	0.39	...	8.80	37
Sweets.				
Cake (sponge)	18.70	1.70	3.00	112
,, fruit	18.20	1.60	3.70	117
Honey	0.11	...	20.21	81
Jaggery (goor)	0.08	...	25.00	100
Jam	0.06	...	19.81	79
Marmalade	0.06	...	19.41	78
Pastry (cream)	0.40	3.20	14.40	91
,, (custard)	1.20	1.70	7.40	51
Pickle	0.31	0.11	1.13	7
Sandesh (best)	5.40	6.00	12.00	124
Sugar (brown)	...	...	26.89	108
,, white	...	...	28.30	113
Treacle	0.06	...	16.95	68
Miscellaneous.				
Boiled rice (bhat)	1.40	0.30	16.70	77
Chapati	2.60	1.00	19.60	100
Cocoa	5.10	7.50	10.60	134
Infants' food (tinned)	3.59	0.93	21.56	109
Loochi (fried in ghee)	2.10	6.40	14.20	130
Paratha (cooked in ghee)	2.30	5.0	14.4	115
Pepper	2.30	5.00	14.40	111
Soup, chicken	2.90	0.20	0.60	16
,, pea	1.40	1.90	3.10	36
,, tomato	0.50	0.30	1.50	11
Yeast, fresh	4.00	0.56	2.49	31

Appendix III.

List of Vegetables and Fruits arranged according to Carbohydrate contents in gramme per ounce. (Chopra).

(1 gm. carbohydrate is equivalent to about ¼ teaspoonful of sugar).

Vegetables.

Vegetable	Carbohydrate
Bitter gourd, large (Karela)	tr.
Bitter gourd, small (uchchhey)	tr.
Sponge gourd (jhinga)	tr.
Malabar night shade (puinsak)	0.10
Papaya, green	0.10
Bottle gourd (kaddu, lau)	0.20
White gourd (chaulkumra)	0.30
Patol, palbol	0.37
Snake gourd (chichinga)	0.40
Lettuce, green (salad)	0.54
Club gourd (loofa, dhundul)	0.60
Asparagus (soot moolee)	0.66
Endive (kasni leaves)	0.70
Plantain flower (mocha)	0.70
Pith of Plantain stem (thor)	0.70
String bean (barbati)	0.80
Spinach (palong sak)	0.82
Broccoli (chhota phoolkobi)	0.90
Raddish (moola)	0.96
Mango (green)	1.00
Rhuburb	0.03
Celery (shalarry)	1.07
Turnip (shalgam)	1.25
Cabbage (banda kobi)	1.27
Tomato	1.27
French bean (chota seem)	1.36
Brinjal (baigun)	1.44
Pumpkin (bilati-kumra)	1.47
Brussel sprout (choke-kobi)	1.61
Cauliflower (phool-kobi)	1.67
Lady's finger (bhindi)	1.70
Beetroot (chukander)	1.75
Turnip tops	1.78
Mushroom	2.00
Carrot (gajar)	2.25
Leek (bilati piaj)	2.63
Onion (piaj)	3.06
Knol-khol (ole kobi)	3.30
Mankachu	3.40
Ole (jungali-suran)	3.60
Green plantain (kanch-kela)	4.50
Green peas (kalaisuti)	4.50
Jack fruit, unripe (inchar)	4.60
Artichoke (hathi chuk)	5.00
Parsnips	5.97
Sweet potato (ranga-alu)	6.00
White potato (shank-alu)	6.20
Fleshy roots (taro)	6.30
Yam (kachu)	6.31
Broad bean (seem)	6.45
Garlick (rasoon)	7.90
Potato	8.15
Jack-fruit seeds (kantal bij)	8.80

Fruits.

Fruit	Carbohydrate
Papaya	0.10
Pomegranate (dalim)	0.19
Cucumber (khira, sasha)	0.57
Cocoanut water	0.70
Lemon	0.88
Blackberry (kalajam)	1.00

APPENDIX III (Contd.)

Lichee	1.90	Orange	2.69
Musk Melon (kharbuja)	1.90	Pineapple	2.75
Water melon (tarbuj)	1.90	Apple	3.54
Pomelo (batabi nimbu)	2.10	Grape	3.93
Pomegranate (bedana)	2.19	Plum	4.10
Banana, plantain	2.26	Bael	4.50
Guava	2.27	Mango	5.20
Pear	2.29	Jack fruit (Kantal)	5.30
Strawberry	2.30	Sugarcane	6.20
Peach	2.60	Cocoanut kernel	7.90

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